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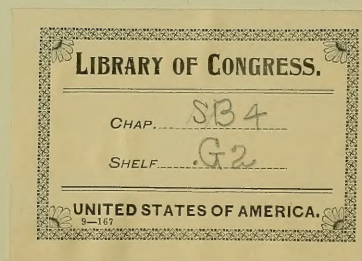
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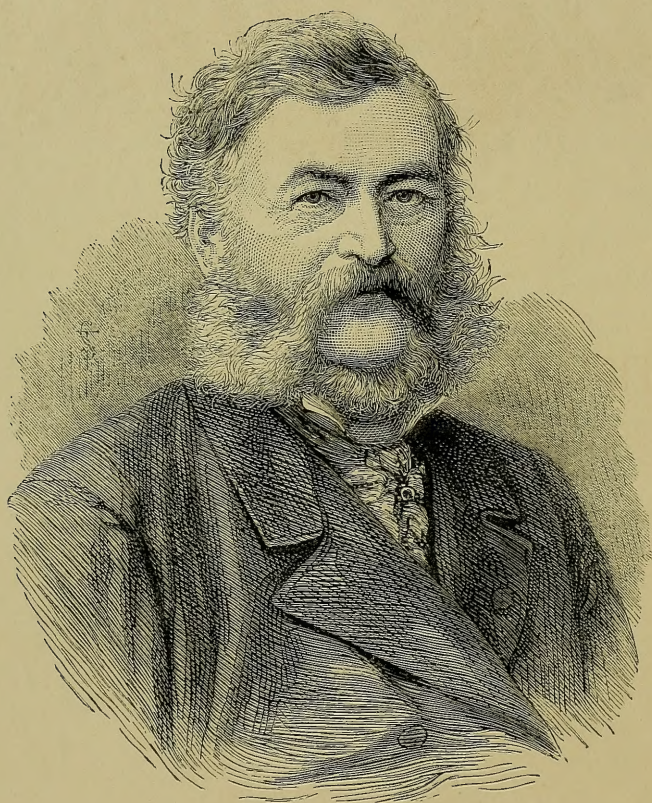
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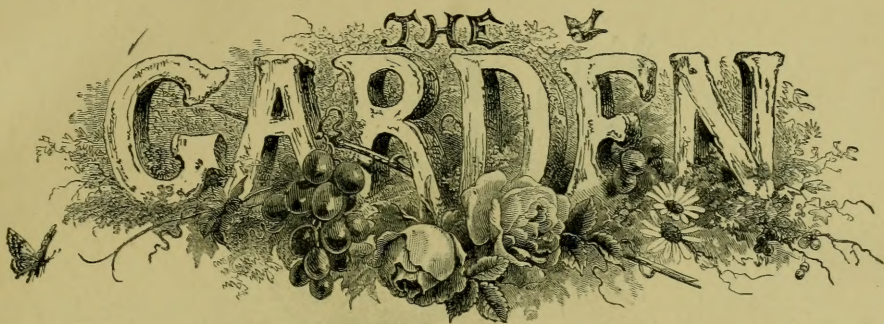
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AN

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OF

HORTICULTURE IN ALL ITS BRANCHES.

FOUNDED BY

W. Robinson, F.L.S., Author of "Alpine Flowers," etc.

"You see, sweet maid, we marry
A gentle scion to the wildest stock
And make conceive a bark of baser kind
By bud of nobler race: This is an art
Which does mend nature. change it rather
The art itself is nature."—*Shakespeare.*

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JEAN JULES LINDEN,

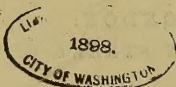
Of Brussels, Horticulturist and Traveller,

THIS FIFTEENTH VOLUME OF "THE GARDEN" IS DEDICATED

IN RECOGNITION OF HIS LABOURS IN THE INTRODUCTION OF EXOTIC PLANTS

TO THE GARDENS OF EUROPE.

W. R.



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J. LINDEN.

M. JEAN JULES LINDEN was born at Luxembourg on the 3rd of January, 1817. He was educated at the Royal Athenæum of his native town. Before entering upon his travels he spent a few years in botanising in the Grand Duchy of Luxembourg and the Belgian Ardennes. Subsequently he went to Brussels to attend the classes of the Faculty of Science. Already he longed for distant explorations. The study of geography, botany, and geology engrossed most of his time. He made such progress in those sciences, that at the early age of nineteen he attracted the notice of Count de Theux, then at the head of the Belgian Government, who had recently decided upon sending a scientific mission to Brazil. M. LINDEN was appointed to bring that mission to a successful issue. The Count authorised him to appoint as companions two scientific men, and he chose M. Funck and M. Ghiesbreght (the former is at present manager of the Zoological Gardens at Cologne; the latter is well known by his botanical and zoological explorations in Mexico, where he seems to have taken up his abode). The three travellers sailed from Antwerp on the 2nd of October, 1835, and reached Rio de Janeiro after a tedious voyage, lasting well nigh three months. In those days steamers in Atlantic waters were unknown, and South America was all but a sealed book to explorers. The grand aspect of the Brazilian coasts, but especially that of Rio Bay, and the first virgin forests that met his gaze made a deep impression on our traveller. It was with real enthusiasm that he started on horseback to explore the regions of the interior—little known at that time—tracing his route through Morro Quemado and Canto Gallo, in the direction of the Rio Parahiba, which he crossed on the territory of the Puris Indians. He explored in succession the provinces of Rio, Spiritu Santo, Minas Geraes, with his travelling companions, and thereafter visited alone the southern provinces of St. Paul and St. Catherine. The mission returned to Belgium in March 1837 with considerable collections both botanical and zoological, and the three travellers had the honour of exhibiting their discoveries at the Royal Palace before King Leopold and Prince Albert. His Majesty conferred on each of the explorers a gold medal as a token of his regard and satisfaction.

Encouraged by the success obtained in this first expedition, the Belgian Government entrusted to the same travellers a second mission, more important than the first. Its object was the exploration of the higher Antilles, Mexico, and Guatemala. They left Havre in October, 1837, and reached Havannah at the beginning of December. They began their researches in the north-western region of the island of Cuba, and their collection of plants was sensibly increasing in quantity and importance when they received an order to join the Diplomatic Mission which the Belgian Government was sending to Mexico. They landed at Vera Cruz in March, 1838; the Mission arrived in Mexico after halting for a week at Jalapa, during which time the environs were carefully explored. Soon, however, our naturalists found the capital of Mexico irksome; they therefore parted with the Chief of the Legation, equipped themselves, and started afresh for the interior, regardless of the war that was then raging between France and Mexico. They visited the plateau of Anahuac, the volcanoes of Popocatepetl and of Iztaccihuatl, the Cofre de Perote, the peak of Orizaba, and the eastern slopes of the Cordilleras. Two years were devoted to this expedition, when the travellers embarked at Vera Cruz for Campeachy, whence they extended their explorations to every part of the Yucatan peninsula. In one of these excursions M. LINDEN was subjected, at La Leguna de Terminos, to a severe attack of yellow fever, from the effects of which it took three months to recover. Having reached by sea the State of Tabasco, our travellers explored it as well as that of Chiapas, and made their way to the northern regions of Guatemala, at that time in a state of revolution. They fell back on the Mexican Gulf, having visited in the course of their explorations the ruins of the ancient cities of Palenque and Ocosingo. M. M. Funck and Ghiesbreght on their return passed through Guadalupe de Frontera in August, 1840, whilst M. LINDEN, still a prey to fever, could only start the month following, passing through Havannah and the United States. He arrived in Belgium in February, 1841, having been absent four years and four months. The scientific results of this memorable journey were considerable. Since Humboldt no exploration had been prosecuted and brought to a successful termination with resources so moderate and surrounded with so many difficulties. War, illness, small and great privations constantly recurring, bad roads, numberless dangers, all these failed to abate the indefatigable perseverance of these pioneers of natural history in the New World. Without counting the innumerable dried plants that were distributed among the herbariums of Europe, we must mention, as relating more particularly to horticulture, the introduction of the following live plants, viz., *Aphelandra aurantiaca*, *Gesnera cinnabarina*, *G. zebрина*, *Abelia floribunda*, *Dion edule*, *Beaucarnea tuberculata*, *B. glauca*, *Ceratozamia mexicana*, *C. muricata*, *C. Miqueliana*, *Astrocaryum mexicanum*, *Brahea calcareae*, *B. nitida*, *Chamerops staurocartha*, *Chamædorea Ernesti-Angusti*, and other species, *Cibotium princeps*, *Oreopanax dactylofolium*, and many valuable Orchids.

With M. LINDEN the passion for distant expeditions increased with years. He had scarcely set foot on Belgian soil before he was planning new discoveries; a craving for the unknown, the legitimate attraction that attaches to fame, induced him again to visit the New World. This time Columbia was the object of his attention. Having been put in communication with Humboldt, he received from him valuable information concerning the regions which he was about to explore. Again delegated by the Belgian Government, he set sail from Bordeaux in 1841. The vessel put into Cadiz harbour, and on the 24th of November resumed its voyage and anchored on the 27th of December on the shores of Venezuela. M. Schlim, a brother of M. LINDEN on the mother's side, accompanied him. After having cursorily examined the

vegetation of the torrid zone of Venezuela from La Guayra to Maiquetia, he directed his steps towards Caracas, whence he began a thorough exploration of the maritime Cordilleras, travelling over every part of the province of Caracas, beginning with the ascension of the Silla and Naiguata. On the 5th of May following he organised an excursion to the interior. He directed his steps towards the west, across the lovely valley of Aragua, passing through San Mateo (where was born Bolivar, the *libertador*), Maracay, the lake of Tacarigua, and stopped awhile at Valencia. Then he crossed the mountains on the coast in order to reach Puerto Cabello, whence he made his way in the interior of the continent by the province of Barquisimeto. The forest of San Felipe and the mountains of Aroa were visited, and on the 1st of June he entered Barquisimeto. He explored the extensive steppes of Quibo, covered with Opuntias, Capparises, and Mimosas, as well as the Trujillo chain and Tocuyo. But here a terrible accident threatened to bring the expedition to a fatal end—a sudden rise of the Rio Tocuyo having stopped its progress. It was, however, decided to force the passage despite the rapidity of the current, and M. LINDEN had the mortification of seeing carried away by the river several of his mules, losing at the same time his reserve clothing, valuable instruments, several reams of drying paper, &c. The party arrived in bad condition at Humucaro Viejo, where the expedition stayed a few days before attempting the ascension of the Cordilleras. A week afterwards M. LINDEN crossed the Paramo de Mueuchies (4012 metres), and two days afterwards arrived at Merida, where he fixed himself for a time, visiting the surrounding country and making new discoveries. Without leaving the high mountains of the Eastern Cordilleras, the journey was prosecuted through San José de Cucuta, Pamplona, Socorro, Velez, Tunja, as far as Bogota, the capital of New Grenada. This was in October, 1842, six months after leaving Caracas and following dreadfully bad roads, but in the midst of natural scenes of infinite beauty and variety, consisting of the productions of the hottest climes as well as those that grow on the tops of high mountains. Two months were spent at Bogota, and these M. LINDEN took advantage of to explore the environs of that town, where he succeeded in collecting some interesting plants. In December, 1842, M. LINDEN came down from the cold regions to the valley of Magdalena, and, passing through Fusagasuga, Pandi, over the celebrated bridge of Icononzo, through Melgar, he crossed the river in order to reach Ibagué, across naked plains which extend as far as the first hills of the central Cordilleras. From Ibagué our traveller carried on his investigations in all directions, crossed the chain of the Quindío as far as its western slope, and spent several weeks in the neighbourhood of the now extinguished volcano of Tolima, the summit of which (5616 metres), conical in shape and of dazzling whiteness, is seen from all the surrounding country. Having returned to Ibagué, M. LINDEN resolved upon going towards the north, through Ambalema, Honda, Guaduas, Bogota, Tunja, Pamplona, Merida, Trujillo, Varinas, a part of the Llanos of Orenoco and Carabobo, whence they laid their course towards Caracas, which was reached on the 17th of August, 1843. More than fifteen months were spent in this expedition, which was unusually fruitful as regards the discovery of new plants.

His journey homewards, after visiting Sierra Nevada and Cuba, took place through the United States in 1844, and he re-entered his native town in 1845, after having spent ten years in dangers and privations, which had shaken a constitution naturally robust. His last journey was without doubt the most fruitful of the three in a scientific point of view, especially as regards horticulture. So many fine Orchids were discovered, that Lindley collected them together and described them in a special publication ("Orchidaceae Lindenianae"). Masdevallias, Odontoglossums, the Oncidium of the higher Cordilleras, Selenipediums, Uripedium Lindenii, and all the Angulosa known at the present day, &c., made their first appearance in Europe. Messrs. Veitch had not at that time established themselves in London. Loddiges & Rolisson were then the chief dealers in Orchids. To M. LINDEN, too, we are indebted for the Bejarias, Thibaudias, the Cyanophyllum magnificum, twenty-five species of Oreopanax and Aralias, Eucharis, Maranta alba and roseo-lineata, and hundreds of others. The numerous and brilliant discoveries made by M. LINDEN suggested to him the idea of forming an establishment specially devoted to the introduction of new plants. This he commenced to do at the end of the year 1845, in his native town, and his houses were soon filled with new Orchids and other plants which he had acquired in Venezuela or New Grenada. MM. Funck and Schlim were also dispatched by him as collectors to regions in which he had noticed plants which he had been unable to bring home with him. This establishment, though comparatively small at first, made rapid progress. Transferred to Brussels, it soon supplied Europe with plants, and took the first place among establishments devoted to the introduction of novelties. About this time M. LINDEN sent collectors for many successive years to Columbia, Mexico, Guatemala, and Brazil; also to Peru, Assam, Java, New Zealand, and, lastly, to New Caledonia and the Hebrides.

On his return to Europe M. LINDEN was appointed Director of the Zoological Gardens at Brussels, a post which he filled for ten years. From 1853 to 1867 he represented in this town the United States of Columbia in the capacity of Consul; and since 1867 he has been Consul-General for his native land, the Grand Duchy of Luxembourg. In 1851 the first honorary reward was granted him by King Leopold I., who created him a Knight of his Order; in 1864 he was promoted to the grade of officer, and in 1871 to Commander of the Order. Various Sovereigns of Europe also conferred distinctions on him on account of the services which he had rendered to botany and horticulture. At all the great international exhibitions M. LINDEN took the highest awards. At Brussels in 1864; Amsterdam in 1865; London in 1866; Paris in 1867; St Petersburg and Hamburg in 1869; Ghent and Vienna in 1873; Florence the year after; Cologne in 1875; Brussels in 1876. No one could oppose him successfully as regards new plants, and the reputation of his establishments at Brussels and Ghent has spread throughout the world. The number of live plants introduced by him or his collectors amount to over 2000 species. We will only quote a few: Orchids, 510 species, including 59 kinds of Odontoglossum and 37 of Masdevallia; Palms, 137; Aroids, 86; Gesnerads, 77; Bromeliads, 85; Melastomads, 57; Acanthads, 23; Rubiaceoous, 51; Ericaceoous and Vacciniaceoous plants, 116; Marantads, 49; Tree and other Ferns, 113; &c.

Such is some of the work of the man whose biography we have just sketched. His influence on the progress of horticulture has been considerable. Not only has he contributed personally to the advancement of science, but we must also place to his credit what he has done by means of collectors. He has created a generous emulation among plant importers, especially in England, a commercial undertaking which has been of great benefit to horticulture in general.

M. LINDEN, whose portrait we publish, is a man of tall stature and strong physique, which years do not seem to impair, notwithstanding the adventurous life which he has led. He is sixty-two years of age, kindly in disposition and

cheerful in conversation, which all who have the good fortune of knowing him appreciate. His knowledge is very extensive. He speaks the dialect of Luxembourg, French, German, English, and Spanish with equal fluency. The thousands of specimens of dried plants which he has distributed among the herbariums of Europe have made his name famous in connection with botany. Moreover, he has established along with M. T. E. Planchon a publication, with the view of recording his discoveries, the "*Plantæ Columbianæ*," and, with the help of M. H. G. Reichenbach, he has published a magnificent folio, filled with coloured plates of the finest Orchids of his hothouses, the "*Pescatorea*," thus named in honour of M. Pescatore, a great lover of Orchids, at St. Cloud. Under the name of "*Hortus Lindenianus*," two parts have been issued of a work devoted especially to the plants introduced by him. The journal "*L'Illustration Horticole*," edited for sixteen years by M. Lemaire, having become in 1869 M. LINDEN's property, he entrusted its editorship to M. Ed. André, who for the last ten years has described in its pages not only M. LINDEN's new plants, but also those of other countries. Our only wish is that such a man may live long to continue the good work to which he has devoted his life, and encourage young travellers to follow his footsteps.



*Gladiolus in the Wild Garden.*

THE GARDEN.

VOL. XV.

GARDEN PLANTS FROM JAPAN.

It is not too much to say that notwithstanding the enormous number of beautiful trees and plants already introduced into Europe from this far-off land, whose vegetation may be said to be so near and dear to our gardens, there yet remains a large residue, not of things less beautiful, but, on the contrary, of trees and shrubs most remarkable and characteristic quite unknown to this country. How this has come about is a question to be answered fully and satisfactorily by those who have so energetically explored its riches in the most cultivated parts; but perhaps a mere passer-by who only spent a month in this unique island may be able to give some data on such a point, and also indicate, however lightly, what riches must be in store for us from the large areas of unexplored lands, of hill and dale, of wood, or wild seashore. This glowing prospect of a coming wealth of beauty must needs have a shadow, for it is evident there must be some good reason why such desirable forms have never been sent us by any (as far as I know) of the indefatigable botanists who year by year have poured into our lap, as it were, so many riches; and briefly it is this, that, owing to the moisture and heat of a Japanese summer, these trees grow so luxuriantly that they never perfect seed, and sometimes are never known even to flower, as I am assured, but this must be clearly an exaggeration. It is a fact, however, that many trees which seed abundantly in China, and thus have been long ago introduced into Europe, where they also perfect seed or fruit, in Japan rarely or never are known to do so, and two well-known instances will illustrate this plainly, thus giving a clue which the Japanese climate explains still more fully. The beautiful *Salisburia adiantifolia*, or Maiden-hair tree, which adorns many an English garden, seeds so abundantly in China and in the south of France, that its Almond-like nuts are used as an article of food, while in Japan so rarely does it fruit, that when at Kama-Kura, admiring the celebrated *Salisburia* tree there, said to be the oldest in the country, planted long ago by some warrior, who placed it in the court of the temple, an old resident told me that he had never been able to discover any seed on it, though he had examined both it and many other trees at all seasons of the year for the last ten years. A still more striking instance is afforded by the *Paulownia imperialis*, a tree whose glorious flower-spikes are succeeded by such a mass of seeds in the south of France that it becomes unsightly, and even dies from exhaustion, while in its native country, Japan, it is rare to find a single capsule on the tree, as far as my experience goes, though the flowering is profuse. Want of seed and difficulty of propagation by other means, as well as the sad losses caused by the long voyage to Europe, must surely be the reason why a hardy evergreen tree such as *Machilus Thunbergi* is not well

known in our gardens ere this; a tree which is remarkably beautiful on the sacred island of Enoshima, large in stature, spreading as an English Oak, with leaves disposed on the ends of the branches something after the fashion of a *Rhododendron*, but of a clear, fresh green colour and somewhat undulated at the edges, and whose great trunk, now silvery, now mottled with red stains, enhances the charm of its foliage and habit. *Litsea glauca* and various *Ilexes* of the richest foliage and colouring must not be omitted from the list of strikingly beautiful trees, which should be ours at some future date; and a walk by the seaside, where the *Euonymus* bushes grow green amid the drifting sand, shows still further treasures, among which two *Photinias* are most prominent. *Photinia glauca*, with large, pale green, leathery leaves, and whose white panicles of flower are like *Spiraea Lindleyana* in shape, braves the sea with impunity, while its lesser congener, *Photinia arbutifolia*, nestles in the undergrowth near, and in spring produces flowers delicately coloured as Apple blossom, which contrast with the scarlet-stained leaves on old shoots, and atone for a somewhat straggling growth. It certainly seems strange that *Photinia serrulata*, which is common in many gardens, should be the only kind well known to us, when these two vie with the familiar *Euonymus* in Japan in braving the severest blasts of the sea, and yet, if ever introduced, are practically unknown to us. *Pittosporum Tobira*, which is less hardy, grows abundantly where there is a little shelter, and *Pinus Massoniana* is the first tree that boldly casts its long arms seaward, as if to defy the fury of a Japanese tornado. *Wistaria* drapes the land side of each bush, and the wild pink and orange *Lilium bulbiferum* grow abundantly down to very high-water mark, where the Venus-ear shells (*Haliotis*) strew the beach with their bright hues, a contest of colours between *Flora* and *Venus*. Inland there are again many fresh subjects of interest, but before closing these remarks I would say a few words on a climate so unlike our own, which yet gives us so many hardy plants. It is truly a case where "extremes meet," for Japanese winters are bright, dry, and cold, while ours are cloudy and wet. With them the flowering of the *Azalea* and the commencement of the summer heats is the signal for deluging rains and thunderstorms, which continue all through the long, hot summer, which a country mainly situated between the parallels of lat. 32° and lat. 42° must necessarily endure or enjoy, as the case may be. Hence vegetation is so stimulated that rank growth is made rather than solid, fruit-producing wood, and flowers, however freely produced in spring, are abortive, and to this we owe much of our success, as well as failure, our drier summer making up for less heat, and so causing a more solid growth. Of autumn they have but little, the change to cold coming very suddenly,

while we constantly prolong that season up to December. The causes are these: Japan has a vast continent to the west, a warm gulf stream to the south-east, and a cold current to north, so the east wind is mild and wet, and westerly winds dry and bitterly cold in winter, while with us, as is well known, conditions are almost exactly reversed, causing corresponding differences of climate. This being once fairly understood, it is evident that our cold, dry, easterly winds are those that most try Japanese vegetation, and that any plant that comes from the west coast of Japan, even though it be far south, is so exposed to dry, cold winds in winter, that it will withstand anything that our ordinary winters bring us, but those from the eastern side of the island, south of the district near Yokohama, cannot be trusted, while in the southern island vegetation becomes tropical.

B. H. WOODALL.

Scarborough.

DOUBLE PYRETHRUMS.

I THINK I never before saw the double Pyrethrum in such fine character as at Mr. Robert Parker's nursery, Tooting, in the month of June last. Probably the cool, moist season had something to do with it, and a good deal was due to the fine soil in which they were growing—a rich, light, sandy loam, that appeared to suit Pyrethrums exactly, and in which they are carefully tended. The flowers were very large and full, and the colours brilliant, especially in the case of some of the newer varieties. I have also seen these Pyrethrums very fine in private gardens during the past summer, and I am glad to perceive that cultivators are becoming alive to their great value, both as decorative plants for the open border and as excellent and most useful subjects to cut from during the time they are in bloom—from early in May till late in October in the open air. One great advantage about the Pyrethrum is, that it is thoroughly hardy; but in all ill-drained soils wet will do the plants harm; especially slugs will be active in eating out their hearts. In autumn and spring slugs are very apt to prey on the Pyrethrum, and more especially in spring, when the young growths are forming. Choice varieties should, therefore, be fenced round with a slug guard of some kind until, by means of division, the grower has more than one plant of each. One of the best guards of this character is a piece of perforated zinc, 4 in. or so in depth, placed in the form of a collar round a plant necessary to be protected.

As there are now a large number of varieties, it is perhaps well to give a selection of some of the very best, taken from Mr. Parker's collection, which comprised all the newest kinds. We will begin with Brilliant, rich rosy-purple, flowers very double, and fine quality; Chamois, buff, with bronze centre; Coquette, delicate pink, very pretty, large and full; delicatissimum, bright rosy-lilac, very fine; delicatum, pure white, very good indeed; Dr. Livingstone, very pale lilac, distinct and fine; Diadem, bluish, large and full; Emile Lemoine, purplish-crimson, tipped with golden-yellow, striking in appearance, very large and double, one of those fine and distinct varieties that attract attention at once; Floribundum plenum, rosy-pink, a variety with a good free-branching habit; Fulgens plenissimum, rich carmine, extra fine quality, and good dwarf habit; Gustave Heitz, rich rosy-red, with orange centre, one that should be in a limited collection; Hermann Stenger, rosy-lilac, a variety of the finest quality and good habit; Imbricatum plenum, rich purplish-carmine, very fine, the centre of the flowers being prettily tipped with white; Gloire d'Italie, bright deep magenta, very fine indeed, one of the best; Icaride, bright purplish-carmine, extra fine; Le Dants, bright shining rose, with orange centre, flowers very large and double; Madame Monier, rosy-blush; Mille Patiti, carmine-rose, a good dwarf-growing variety; Michael Buckner, rich rosy-crimson, with orange centre, remarkable for the large and double character of the flowers; Mrs. Dix, bluish, shaded with purple, remarkable for the size and great beauty of the flowers; No Plus Ultra, delicate bluish-white; Nemesis, lilac-carmine, fine and double; Pean Ronce, rosy-crimson, very fine and distinct; Progress, rich crimson, one of the finest; Rubrum plenum, rosy-purple circumference and deep rose centre, very fine indeed; Triomphe Demay, pale lilac, large and fine; Virginal, pure white, the centre tinted with orange; and Voie Lactée, pure white, suffused with delicate pink. Any dozen selected from the foregoing would form a good collection to commence with. The newer introductions show not only a tendency towards a larger size and more symmetrical shape, but also towards a greater depth and variety of colour. Such a fine variety as Progress well deserved its name, for it is a decided advance towards the fine crimson hue we are desirous of seeing present in the flowers. The best time to make a bed or plantation is in early spring.

There is this advantage about it, that the plants have not to stand the rigours of a winter without being well rooted into the soil. If the grower should be led to think he could get better plants in autumn than in spring, he can pot them up and winter them in a cold frame, and so get them well established before turning them out in the open ground. A good, free loam, well manured at the time it is deeply dug, suits the Pyrethrums well, and in it they stand a good deal of drought. I have seen beds of Pyrethrums doing finely that were well mulched with manure and leaves in early summer. This fed the roots near the surface, and its presence told in the increased size and brilliancy of the flowers. This dressing or mulching can be forked in during autumn, and a fresh supply given early in spring. Any variety can be readily propagated by dividing the roots. They throw out side shoots or growths during the summer, and if these be removed in the autumn, and potted singly into small pots, and wintered in a frame, they grow to a good size in spring. Another good plan is to prick out the offsets into a prepared bed of light, free, sandy soil, and cover it with a small frame or hand-glass. Slugs must be looked after, and killed. The single Pyrethrums are, to a great extent, lost to cultivation. There has been a kind of craze for double flowers, and in the struggle for existence which fashion decreed, the single forms went to the wall. They may become popular again, as the single Dahlias are just now. The great danger of these changes in floral fashion consists in this, that they lead to the neglect of certain plants, which, while under a shadow, become lost to cultivation. We want more harbours of refuge in the way of old-fashioned and botanical gardens to take care of such plants that the whim of the moment overlooks.

D.

Japanese Primroses Out-of-doors.—In answer to "Primula" (Vol. XIV, p. 563) allow me to say that our soil here is not too light for these Primroses, and that P. cortusoides amena does but little better here out-of-doors than japonica. The improved varieties of it, however, are magnificent in pots, and the simple protection of a cold or frost-proof pit is found sufficient for them both.—D. T. FISSE.

—It is to be regretted that the plate representing the varieties of *Primula cortusoides amena*, or P. Sieboldii, as it ought to be called, was labelled "Japanese Primroses." It has only, as I felt sure it would, caused confusion. The Japanese Primrose *par excellence* is undoubtedly P. japonica, and no other species ought to usurp its title. P. Sieboldii (*cortusoides amena*) ought to be called Siebold's Primrose. It is perfectly hardy, but, like most of the Primulas, capricious. I can do no good with it at all except in pots, but a few miles off at Ashridge my neighbour, Earl Brownlow's gardener, Mr. Gray, grows it without any trouble in the open border. I saw P. japonica growing like a weed a year or two since in Mr. Latimer Clark's wild garden at Hitherwood, near Sydenham, and a Cheshire correspondent once told me that he knew a garden in that county where the pretty little P. nivalis flourished and seeded itself in all directions like a Cowslip. The only one of the genus which has this delightful habit here is the Barfield Oxlip, the true P. elatior of Jacquin, which the late Mr. Doubleday, of Epping, sent me a few years before his death.—H. HARPER CREWE, Drayton-Beauchamp Rectory, Tring.

How to Treat Plants Inclined to Ramble.—Those of your readers who wish to grow the *Calystegia* and *Egopodium Podagraria* fol. var. (recently noticed in THE GARDEN) or any other plants with a like propensity to ramble may easily do so by simply planting them first in an old tub or pot, and then plunging it nearly to its rim in the desired spot. *Tropaeolum speciosum* may be successfully grown in this way, with the advantage of knowing where to find it when it is wanted. Treated in this manner nearly all of these beautiful subjects may be associated with the most choice Alpines without becoming mere weeds; and, as for effect, let a *Calystegia* or *Tropaeolum* allowed to ramble at will over a dead branch speak for themselves.—F. GIFFORD, Edinburgh.

Buphthalmum Cordifolium.—This is a remarkably fine plant for the wild garden; it has large and handsome foliage, and large Sunflower-like blooms of a good orange colour. It is extremely hardy on any soil, and its true place is the wild garden among the larger perennials, or, still better, in a small spreading colony by itself. The species belongs to a very small family, some of which are tropical and others European, but none, so far as I have seen, is so suited for the wild garden as B. cordifolium, which attains a height of from 3½ ft. to 5 ft., and comes from Hungary. Like almost everything else of a similar character, there is no trouble whatever in either cultivating or increasing it.—V.

THE FRUIT GARDEN.

FAILURES AMONGST INDOOR PEACH CROPS.

In discussing this subject, I can only refer to the general causes of failure, for a cultivator may fail in many cases through causes entirely local. One of the commonest causes of failure is ill-ripened wood, a condition which should hardly exist under glass anywhere, in England at least, for, with the aid of a glass roof and the option of closing and opening the house at pleasure, there should be little difficulty in getting the wood of Peaches properly matured. It is simply a question of keeping up the necessary degree of temperature during the summer by judicious ventilation, and especially of economising sun-heat in autumn. Attention to these matters should not be relaxed until it is seen that the young shoots are hard, brown, and ripe, and the leaf and fruit buds prominent and well developed. Maturity is not a question of the leaves falling, for when the cold comes they fade and fall from ill-ripened shoots as well as from those that are well matured. Indeed, the leaves will hang quite green and fresh long after the wood has become hard and ripe, if a comfortable temperature be maintained; but in such cases they fall off readily if the trees are shaken. Another question, however, is, what are the best means to secure a crop of fruit when it is known that the wood is not so well matured as it should be? In such a case the first thing to do is to cut back the most unripe extremities of the shoots to where the buds are tolerably plump and the wood hard; and the next thing is to give the trees a complete rest during the winter months, neither exciting by fire-heat nor permitting injury by frost, though a few degrees will do no harm, and they had much better be exposed to frost than subjected to a temperature above 45°, which is sufficient to excite immature buds at any season, and probably, as a consequence, cause them to drop when the house comes to be started at the proper season. This dropping of the buds is sometimes a serious evil, and it often occurs in the best-managed Peach houses, early ones particularly; but in bad cases nearly all the buds drop off the tree, except the leaf buds at the points and base of the shoots, which never drop—a wise provision of nature, for did they fall it would be the almost complete ruin of the tree, as growth would entirely depend upon adventitious buds pushing from the old wood. For years here we were afraid to cut back the shoots of a tree of the Noblesse Peach, which was in the habit of dropping some of its buds every season; for it must be remembered that it is the natural terminal leaf bud that does not drop. The end bud of a cut-back shoot is quite as liable to fall as the others, and the wood, of course, dies back during the season to the next growth, unless it be cut away at the beginning, which is the best thing to do. When trees that are not thoroughly ripened are started, say in March, they should be pushed on gently in a day temperature ranging from 50° to 65°, accordingly as the weather is dull or sunny, and at night the temperature should be allowed to fall to 40° or 45°. The borders should be kept in a properly moist condition, but little moisture should be given overhead. A slight dewing will be sufficient on the afternoon of sunny days. In ill-ripened trees the leaf buds are apt to push in advance of the fruit buds, and when they get too much in advance the flowers do not open, and failure is the result. In healthy, well-matured trees the flower buds open first, and the shoots only begin to push noticeably after the fruit is set. In the case of ill-ripened trees, therefore, this condition of growth must be secured by artificial treatment, which consists in simply pinching the points of the leaf buds persistently as fast as they push, until the fruit has set, when they may be left alone. This will cause the flowers, that would otherwise have remained unopened, and which would eventually have dropped off, to expand; and when they are fully blown, and the pollen is dry and powdery, artificial fertilisation, either with the syringe on a fine day, or a camel-hair pencil, will insure a "set," when the chief difficulty may be considered over, though on ill-ripened trees a greater proportion of fruit will drop at the stoning period than otherwise ought to happen.

Another frequent cause of failure is an unsuitable temperature; sometimes the temperature is too low and sometimes too

high when the trees are in flower, and the fruit fails to set. This happens oftener in early than in late houses, as in the first the maintenance of an even temperature depends entirely upon artificial means. If the temperature be maintained at a very high figure, the fruit will not set well, but most danger is to be apprehended from a too low temperature. This is very often observed in cases in which the fruit sets just above or near to the hot-water pipes, and nowhere else. Failure from this cause is not so likely to happen when the days are bright and sunny, when with ordinary care the proper temperatures can be kept up, as in dull weather. In such times everything depends upon the judicious application of fire heat. In bright weather the heat may be allowed to run up to 70° or 75° as early in the morning as possible, and kept at those figures till the sun is off the roof, after which the thermometer should decline gradually to 45° during the night, but during dull days a steady temperature of from 55° to 60° should be maintained, with a somewhat dry atmosphere and a little ventilation back and front, and these degrees of heat should be preserved from daylight to dark during the short days. The trees may also be shaken now and then to set the pollen free, and it will do no harm whatever, but rather good, to syringe the trees to help to distribute the pollen two or three times a week, about one o'clock in the afternoon. It has been said that if the sky is constantly overcast when Peaches are in flower, scarcely any fruit will set; but that is not the case, as I have frequently, by the above means and other attentions, had a very good set on all our early trees when there has been a dull snowy sky during the whole of the flowering period. This happened only last January, when our early Peaches were in flower; yet there was quite a thick set, especially in the case of the Elrune Nectarine. As regards ventilation, it is our practice always to keep a little air in the house, both back and front, night and day, no matter what the weather may be. A very small chink of air keeps the atmosphere fresh and sweet, and that much should be given, even if coals are burned to keep up the extra heat required in consequence of the escape of warm air at the ventilators. In old houses, glazed with short panes and many laps, and not unfrequently breakages here and there, it was unnecessary to open the ventilators; but now, as houses are glazed with long panes closely overlapping each other, little air gets in, except by the ventilators.

In lately constructed Peach cases or glass-covered walls failures are far more common than they need be. In some places, in fact, such structures are, through mismanagement, little better than open walls. They are generally used for other purposes besides Peach growing; they are often, indeed, filled with plants, and to keep these comfortable the house is frequently kept too warm for the Peaches between November and April, and the consequence is, that the trees begin to move and come into flower too early in the season, and either fail to set their fruit, or the latter drops off before stoning, simply through a prolonged low temperature. Peaches that flower in February, or even early in March, in an unheated glass case, are more likely to fail than otherwise. They should be kept back by keeping the case cool as long as possible, and if they can be held in flower in April, the chances of a good crop of evenly-swelled fruit are greatly enhanced.

Among other causes of failure, I suppose over-cropping need scarcely be alluded to, its effects being but too well known. There is little prospect of fruit the season following an excessively heavy crop; but all trees are not alike, and hardly any rule can be laid down for guidance on the subject. I always crop according to the vigour of the tree, and even of the individual branches. On weak shoots the fruit at the final thinning is left about 1 ft. asunder or more; over strong and vigorous limbs much less. The Victoria Nectarine, which is an extraordinarily vigorous variety, we crop twice as heavily as any other sort, leaving the fruits from 5 in. to 6 in. apart, and frequently less, all over the tree; and, thus cropping, it stands for many years in succession, producing at the same time exceedingly fine large fruit. Grosse Mignonne is also a vigorous-growing Peach, and may be cropped heavier than some other kinds, but it is a shy setter. Heavy cropping is one way of checking excessive exuberance, and should be resorted to when trees are making strong shoots.

Very frequently failure of Peach crops is laid to the border, which is generally supposed to be too wet or too dry. My own impression is that the condition of the border has seldom anything to do with the matter. It is seldom that an ordinary, well-cared-for border is either so wet or so dry as to cause the crop to fail, either when setting or stoning, and, after these two critical periods are passed, only the grossest carelessness can cause what may be called really a failure. Gross growth from a too rich soil, or debility from the opposite cause, is of course a different thing, and in each case the remedy suggests itself. When Peach houses, either late or early, are started the border should be examined, and, if dry, watered most copiously and mulched. This will usually carry the trees on for a month or two; but, as summer advances, frequent waterings become necessary. S. W.

PEARS SUITABLE FOR NORTHERN ENGLAND.

I FIND it very difficult to lay down any straight line of proceeding for the culture of winter Pears—the whole thing is wrapped up in so many circumstances, the greatest of all being atmospheric changes. We never get too much heat, but often too much cold and too much wet, in the absence of heat; moisture and sun-heat are two essential elements in the culture of good Pears. The soil, which is various in different localities, has a wonderful effect on the growth of Pears. No doubt a good strong rich loam is the best suited for Pear culture. The border should be as rich as a Vine border, both for making good strong spurs and for growing the fruit to a good size and full of quality. The spurs should be as near the wall as possible, to allow the fruit to get the benefit of the heat contained in the wall. Root-pruning the Pear I have a great objection to, because the fruit must be small if the feeders are cut away. If my trees are too vigorous to make fruit-spurs, I ring the branches by taking out about one-eighth of an inch of bark all round with a sharp knife. This will have the desired effect of producing spurs, and the following season fruit is almost certain, the weather being favourable. The ring in the bark should be made as early as possible, when the bark will separate from the wood, and by autumn the two parts will be united, and ready to assist the swelling of the fruit in the following summer. If once a good quantity of spurs and fruit be produced, ringing is hardly ever necessary afterwards, as Nature will do its own work, and the tree bears fruit in consequence.

The varieties I now grow are very limited, and it must be taken into consideration that I am situated forty miles north of York, and I find so many of the varieties highly recommended by writers in the south to be quite useless here—some are too small, and others not at all suited for the climate. It would be difficult for me to name a promising variety that I have not tried here; quantities of them have now disappeared and are almost forgotten, and have given place to new favourites. Marie Louise is the greatest favourite of all, and no wonder, for I can supply the table with this Pear throughout the months of October, November, December, and a little into the new year; the size, if not very large, runs up to 10 oz., and it is exceedingly handsome. Our daily average use in November is about thirty Pears. I have the Marie Louise grafted and ingrafted four times over in some places, and I must say the stock has a wonderful influence on the fruit. One grafted on the white Doyenné Pear comes in very early, and often ripens on the tree by the last week in September; the next for earliness is twice grafted on the Autumn Bergamot, the one after this is three times worked, the last on the Swan's Egg Pear. I have a fine lot from this stock generally, and they are the best we have in quality. Those ingrafted on Gansel's Bergamot are great bearers and grow to a good size; those ingrafted on the Beurré Rance are in use now, and will continue through the month. Winter Nellis is the next favourite sort to follow Marie Louise. It is four times grafted, the last time on Uvedale's St. Germain's. This sort has wonderful vigour so grafted, always bears plenty of fruit, is always good, and never cracks. This sort is no use here on the Quince stock; it grows too weak. Glon Morceau twice grafted, the last time on Beurré Rance and on the south wall, is generally good and comes in for January and early in February; they are not so fine as I have had them other years; the earliest blossoms were killed in the spring, consequently they did not grow so large as usual. They are fine for stewing, and for that purpose they are being used this year. Easter Beurré is the next favourite, and a grand old Pear it is, always good; if not left to spoil itself on the trees, with a little management this Pear might be had in use for a long time. This sort I have grafted on various stocks, but none on the Quince. The sorts I have named will carry me through a winter, but I have many other good useful sorts to fill up a gap if needed. The common early summer Pears are no use here for table.

The Jargonelle is the first to be of use to me; this is grafted on the Pear stock, and is very fine generally; on the Quince it is subject to canker and useless. Marie Louise ingrafted on the Jargonelle never bears any fruit worth naming, and what it does bear is very small. I expected great things from this stock, and grafted three trees, two of which are now destroyed—the other I will give another trial, as it has a good promise of fruit-buds, after being very liberally treated at the roots, to give it strength. The blooms of this tree are very tender, and stand no frost when in flower. The next to follow the Jargonelle is that monster Pear, Souvenir du Congrès, two fruits of which will make a dish, and if eaten just when it is ripe it is delicious. It has a fine colour, and is very handsome on the table. Williams' Bon Chrétien comes in about the same time, and, like Souvenir du Congrès, requires to be gathered before it is ripe to have it fine in flavour. Beurré d'Amanlis ingrafted on Hacon's Incomparable is always very large and excellent in flavour, and will ripen on the tree or in the fruit-room. Louise Bonne of Jersey is another fine-flavoured Pear, but should always be on a vigorous stock. It is poor on the Quince stock, and apt to crack.

When I added Doyenné du Comice to my stock, I thought I had a great catch. I ingrafted it on various strong-growing stocks, and tried to palm it off as superior to Marie Louise, but Mr. Milbank pronounced it too sweet and wanting the fine aroma of the Marie Louise; however, it is a good useful sort for our climate and soil, and does well on any stock except the Jargonelle. Beurré Diel ingrafted on the Swan's Egg Pear is delicious and very large, but always a little gritty. Duchesse d'Angoulême is never first-rate here, neither is Beurré Clairgeau. Dunmore is a large, handsome Pear, and well suited to this climate; although it is not of the first quality, it is a good Pear. Hacon's Incomparable is a large handsome Pear of first-rate quality on the old Pear stock, but is rather shy in bearing; it bears well on the Quince, but the fruit is rather small. Josephine de Malines is very uncertain in quality, but bears well on any stock; not thoroughly good, except in very fine seasons, but useful for the kitchen. Beurré Hardy is a most delicious Pear ingrafted on the Pear stock. Beurré Sterckmann, Knight's Monarch, and No Plus Meuris are only very moderate sorts here. Beurré Rance never ripens here. Beurré Superfin is a good useful autumn Pear if grafted on the Quince; grafted on the Pear here it is very poor in every way. Bergamot Espéren in fine seasons is very useful. The gathering of Pears requires to be studied very particularly. The molting Pears will mostly bear hanging long on the trees without losing the flavour, while the gritty sorts should be gathered as soon as they show signs of ripeness, and are much improved if finished off in a warm temperature.—WILLIAM CULVERWELL, in "Gardener's Chronicle."

"Caledonia," described by Scott, Burns, and Ramsay," forms a large 4to volume, well printed and illustrated. Amongst the illustrations, which are by MacWhirter, are Lindlithgow Palace, Tantallon Castle, the Hero's Targe, Fingal's Cave, Iona Cathedral, Neidpath Castle, Lochleven Castle, Fall of Foyers, and others, all well reproduced on wood by Patterson. The letterpress contains some of the best poems of the authors just named, and the book, being tastefully printed will prove a welcome gift at this season of the year. The annexed is an example of the illustrations, many of which are very good.

Nettles.—I read with the most profound amazement the statement of M. Lavallée that Nettles only grew in the vicinity of houses. We know, alas! to our sorrow, in England that beds of Nettles far removed from any house or building are as common as Blackberries. Where has M. Lavallée lived to make such an astonishing assertion? —H. HARPUR CREWE, *Drayton-Beauchamp Rectory, Tring.*

The Cretan Borage (*Borago orientalis*) is a somewhat vigorous growing perennial, bearing pale blue flowers early in spring, and in good soil having large and imposing foliage throughout the summer. Easily naturalised in any rough place, it is not worth a place in the garden proper, being very coarse in habit and occupying too much space; it should be associated with the early spring flowers. The common Borage is a very pretty plant, naturalised in dry places or banks, where it might be often welcome to those who sought it for other purposes than its beauty. Borage laxiflora is charming with its numerous suspended blue flowers; it grows very freely on sandy soils. The family is a small one of South European distribution.—V.

THE INDOOR GARDEN.

FINE-FOLIAGED CONSERVATORY PLANTS.

Nothing adds more to the interest attached to conservatories or greenhouses and helps their embellishment so much at this dull season as fine-foliaged plants, of which there are great numbers that are sufficiently hardy to bear the temperature of a greenhouse or conservatory remarkably well. Some of the noblest and best of these are Palms, but, unfortunately, many are deterred from growing them owing to an idea which is prevalent that they are mostly tropical plants, and require great heat, and that they soon attain such a large size as to be unmanageable in the limited amount of room that can be

afforded them. If potted in fresh soil frequently and encouraged to grow on, this would no doubt be the case, but with their roots restricted, it is surprising the great length of time they may be kept moderately small and in a thoroughly healthy condition, but to do this they must be afforded an abundant supply of water during the summer months, a season when, if the drainage is free and open, it is almost impossible to give them too much. One great advantage in growing Palms is that they will stand more hardships in the way of cold draughts, absence of bright light, the dry, heated air of rooms and corridors where gas is used, and such like adverse conditions, better than most other plants. A few years ago their high price was greatly against their extensive use, but of late they have been raised in vast quantities from seed and are

now offered at such a low rate that they are among the cheapest of plants, and, therefore, within the reach of all who wish to possess them. *Chamerops Fortunei* is so hardy that in anything like favoured localities it will stand out without protection, so that when this gets too large it may be turned to good account for planting out on lawns or other conspicuous places where it can have a little shelter from winds, which, if violent, somewhat damage the foliage. *Areca sapida*, a New Zealand species, is a very ornamental Palm of moderate growth, and very distinct in habit from the preceding, but like it it is many years before it reaches a large size, and it is a plant that always looks well, owing to its fine healthy green colour. *A. Baueri* greatly resembles it in every respect, but it is stronger growing, and, therefore, not so well adapted for small houses. *Scaevola elegans* is, as its specific name implies, a very ele-

gant Palm, having gracefully arching leaves, which, standing out clear of other plants beneath, have a very pleasing effect. *Chamerops humilis* forms a beautiful object, and, from its more compact growth and the way in which it sends out suckers with foliage near the base, it makes an admirable specimen for a vase or standing singly, so that it may be seen to advantage. *Latania borbonica* looks well, too, in the same way if placed beneath the eye, so as to show off to advantage the tops of its fine glossy leaves, and their exquisite form; but this is a variety which, owing to its spreading propensity, soon occupies a good deal of room. It is, however, a noble species where space can be afforded it, as are also the following, all of which will succeed in a greenhouse or conservatory temperature, viz., *Kentia Canterburyana*, *K. australis*, *K. Fosteriana*, *K. Bel-*

moreana, *Coccothrinax procaceana*, *C. chilensis*, and *C. coronata*, *Thrinax parviflora*, and *Corypha australis*. Any of these are well worth growing, and are fine ornaments in any house, and when they get too large can generally be exchanged for others of smaller size, or, if not, wintered in any light sheds out of reach of frost and plunged or planted out in the sub-tropical garden during the summer, where they will be a great help in giving distinctness and character. For associating with Palms *Dracaenas* come in most usefully. They are all plants of a fine type and stately habit of growth that are easily managed, and if well cared for they are always in good condition. *Dracaena australis* is one of the best, the leaves of which are narrow and gracefully recurving, and when in a small state the plant is a very useful one for table decoration.

To this may be added *Cordyline indivisa*, *Dracaena Veitchii*, *D. cannaefolia*, and *D. rubra*, all of which may be confined to small pots and kept in perfect health for many years. The soil in which these and Palms do best is tough fibry loam chopped up roughly, and in this they should be potted somewhat firm if it is desired to restrict the growth, and to keep the leaves of a healthy appearance nothing answers better than soot water, which, not being a very powerful stimulant, does not add materially to the vigour of the plants. The only insects that affect Palms to any extent are scale, which, from their minute size and the tenacious way they adhere to the leaves, are very difficult to eradicate by hand-washing, as they cannot easily be got at, especially in the case of such as have furrowed leaves or stems, in which depressions the small white scale generally take up their abode. With pot plants that can



"The Hero's Targe."

be laid on their side, the readiest way of getting rid of these pests is to use some Fowler's or Abyssinian mixture in the proportion of 4 oz. to a gallon of soft water, and syringe it on, letting it remain for a few hours, when it should be washed off again before the plants are placed in an upright position. This will prevent any portion penetrating the soil and getting to the roots or collar, where it would be likely to cause injury. Paraffin is found to be a capital insecticide used at the rate of a wineglassful to a gallon of water, but in applying this remedy it must be kept quickly agitated the whole time, or the paraffin, owing to its oily nature, floats and is not equally distributed, some parts of the plants getting more than they will endure with safety. Dracænas are likewise subject to scale, but not to the extent that Palms are, and, although they have a greater immunity from these insects, red spider frequently attacks them, especially if at any time they are allowed to get dry at the roots. These pests are easily dealt with by running a soapy sponge up the leaves, which not only takes them off but greatly brightens the foliage.

Another class of greenhouse plants that should be in every garden where vases in rooms have to be supplied, are the Aspidistras, the leaves of which closely resemble those of some of the Dracænas in their size and form, but instead of being borne up the sides of single stems like them, they have long footstalks and come from the joints of slowly creeping, fleshy roots or stolons that travel just beneath the soil. They therefore admit of propagation very readily by division, which is the only way they can be increased; this operation is best carried out in the spring just as they are beginning to grow, a time when the injured part quickly heals over. I know of nothing in the plant way equal to *Aspidistra lurida* variegata, and its normal green variety, for standing impure air, a striking proof of which may be seen in the Westminster Aquarium, where, although even Palms look wretched and most Ferns are dead and dying, Aspidistras are holding their own bravely, and appear as if they would bear with it all. This exceeding hardihood of constitution, coupled with its remarkably bright cheerful appearance, renders it valuable as an ornament to grow in windows in towns, where its presence would add a cheerfulness that few other plants could give. The fine bold leaves have broad bands of rich creamy-white running up them, and the contrast between this and the polished-looking green is most striking. Red-foliaged Dracænas, such as *D. terminalis* and Cooperi, associate well with it if placed one on each side or *vice-versa*, and when arranged in this way the whole has a capital effect. Although so thoroughly hardy as to endure a low greenhouse temperature, or even live outdoors in a sheltered position with very slight protection in winter, Aspidistras enjoy moist stove heat, and if grown in it in the spring the warmth brings out the variegation to a greater extent than it generally appears in others not subjected to such treatment. Peat likewise has a favourable effect in developing more colour, as, although they grow just as freely in loam, the plants have then an inclination to revert to their normal condition. If they have ample drainage these Aspidistras cannot well have too much water during the summer months, and, being little subject to insects, they seldom give trouble in keeping clean. A sponging, however, now and then is a great help, and always pays for the labour.

Burya latifolia variegata is another capital plant for greenhouse decoration, and one that, from its habit, associates well with Camellias, the foliage being nearly of the same shape and character, but with a good deal of colour, which is always stronger and more permanent in the old leaves than on any of the young growth, and it is, therefore, at its best in the winter. Besides having such beautifully marked foliage, the stems of the shoots are red, and when seen under artificial light, show up to great advantage. This *Burya* is said to be nearly or quite hardy, but of this I am doubtful, as I lost a handlight of cuttings that had been struck outdoors, and were left till late in the winter without any protection, when they were killed by the first sharp frost that occurred. Unfortunately, it is rather a slow-growing plant, and takes some time to get up good specimens, unless they are subjected to stove heat early in spring, so as to get a double growth out of them in a year. This may be done by giving them a rest in June, and then

starting them again where they can be shut up early in the afternoon and syringed overhead. Like most variegated plants, *Eurya variegata* is benefited by a rich, open soil, and likes liquid manure if given when growing freely during the summer. I find it propagates best if the cuttings are put in early in autumn, and placed in a cold frame under a clear bell glass, or where they can be kept close till April, and then removed to where they can have a little extra warmth to induce the formation of roots. *Coprosma Baueriana* variegata is likewise remarkable for the great beauty of its foliage, the leaves being broadly banded with rich yellow, and the centre a fine glossy green, the whole surface looking as if polished, thus giving the plant a very healthy and cheerful appearance. Seen in contrast with sombre-looking Camellias, the contrast is very striking, and a few good specimens of it quite enliven a house. Being of a somewhat pendulous habit, it makes a capital basket plant for suspending in windows or conservatories, and with a little tying and support by means of stakes, forms neat bushes in pots. Cuttings strike readily in heat in spring, and the only insect that affects it is green fly, which, if not taken in time, cripples the young leaves to such an extent as to quite spoil their shape and beauty. S. D.

BEGONIA REX, ITS PROPAGATION AND CULTURE.

Few plants have created a greater sensation and attained such rapid popularity, as did this species of *Begonia* on its introduction into this country. Numerous varieties were raised, and almost every establishment possessed a collection of them; now they appear to be much neglected, and one seldom sees them thoroughly well grown. It is difficult to assign a reason for this neglect, inasmuch as they are really useful for indoor decoration, and may be used with considerable effect, either in apartments, or as growing freely amongst the other inmates of the stove. Their culture and propagation are very simple, and good plants may be easily grown by anyone who possesses the convenience of a genial, regular temperature in early spring. In order to obtain young plants, cut off an entire leaf, lay it with the under side resting upon silver sand, then with a sharp knife cut through the main veins of the leaf, just below the conjunction of a small vein. Peg these down so that they rest upon the sand, and place them, if possible, in bottom heat. If such accommodation cannot be afforded them, then place the pan where it receives the greatest amount of atmospheric heat. If carefully attended to in watering they will soon emit roots where severed, and little leaflets will show themselves, when they may be carefully potted into 2½-in. pots. At this stage they are liable to the attacks of the woodlouse, which will often, if not checked speedily, clear the whole lot off. When once fairly established it does not appear to molest them. If a few Potatoes are placed about them, cut into halves, and the inside scooped out, placing the hollow part downwards, these pests will resort to them in preference, and may be thus destroyed. As soon as the little plants are well established shift them into the next sized pots, and from thence successively into 4-in. and 6-in. pots. The compost should consist of well-sanded, turfy peat with a small proportion of loam amongst it. The pots should be well drained, so that when fairly in growth abundant supplies of water may be given. These plants require but little air; they luxuriate in a warm, moist atmosphere, free from drying air or cutting draughts. In such conditions the leaves develop finely, and the shades of colour therein are well defined. They should, however, by no means be excluded from the light when in full growth; they should be merely screened from the hot sun. When fully grown, they may, if required for general decorative purposes, be removed to a cooler house, as they will thus be better enabled to withstand the vicissitudes of climate which the placing in apartments entails upon them. The same plants may be grown on from year to year, shaking them out and repotting in the spring. If at all leggy they may be cut off near the crown, and treated as cuttings. They will soon form fresh roots, and may be grown on again. These old plants serve admirably for the formation of larger specimens. By putting a few of them together in a 10-in. pot, a handsome mass of foliage will be obtained. A few well-grown examples placed amongst Ferns

Orchids, or other occupants of the warm house do much towards enlivening and creating variety therein. This *Begonia* will do well in a window during the warmer months of the year, and the effect in large light rooms is excellent, if it be associated with bright flowering plants. I may add that propagation may be carried on with facility during the summer; and, if placed in a close house or pit, they will need nothing more than the natural warmth of the season to enable them to make roots. I have myself generally preferred to propagate about July; the leaves are then healthy and free, and the young stock is of a much better description than that obtained from plants that have seen some wear and tear. In this case it is only needful to let them remain until spring, and then pot them off and grow them on as above directed. J. CORNHILL.

Byfleet.

HEATING SMALL PLANT HOUSES.

DURING such wintry weather as that which has just visited us the most important question to thousands is that of how best to keep the frost out of their small plant houses. A costly heating apparatus will often prove as expensive almost as the erection of the building, and therefore it is but natural that the cheapest method of warming should be sought for by those whose means are limited. Few methods of heating have of late been so persistently pressed upon our attention as that of gas stoves and petroleum lamps, but most of these have proved but as snares for the unwary, as it is simply impossible that the amount of heat required to exclude severe frost can be got out of the flame of a gas burner or that of an oil lamp. Heat must be proportioned at all times to the amount of combustion that produces it, and because an oil flame may give a medium amount of warmth to a small lamp stove, it does not follow that it can transmit that heat to any considerable distance beyond it; indeed, as the flame alone is the generator of heat, it is self-evident that the more the stove absorbs the less there is for the warming of the atmosphere. It is therefore only by making a costly use of lamps or stoves within a house that sharp frost can be excluded. A further drawback to these lamps is found in the consumption of air on which the plants exist, and in the unpleasant perfume emitted. Either of these results are destructive to healthy plant existence, and even if capable of excluding frost, such gain would be more than counterbalanced by the mischief done to the plants in these directions. Without doubt the simplest and least costly mode of heating small plant houses is by means of a flue, an old-fashioned method, but one that will answer every purpose, if it be properly constructed, and the fire receives efficient attention. One special advantage which the flue presents to the amateur is its comparative simplicity. Except it actually wears out, it can hardly get out of order, and the fire may easily be left to the attention of an assistant. A flue can be built with the house, or it can be put in at any time afterwards. The chief essential to its success as a heating power is that it shall, from furnace to outlet, have a slight incline, and then a fair amount of draught is assured. Too strong a draught is not desirable, the object being to secure enough heat to exclude frost, let it be ever so severe; and, to do this, it is simply necessary to keep the fire looked to, perhaps a couple of hours later at night than ought to be necessary when only moderate frost prevails. Any tendency on the part of brick fires to promote dry air can easily be remedied by placing a few pans of water upon the flue. If it be found to take longer to warm a brick flue than water pipes, at least it is longer in cooling. As a hot-water boiler for the heating of small plant houses, I have found none better than a small conical one, that does not need setting in brickwork, and which can be placed in a tool house or outhouse adjoining the plant house to be heated. One of these, costing 50s. only, will heat 100 ft. of piping—more than enough to warm any medium-sized amateur's greenhouse. That it can be used without brickwork is a great advantage, as it can be transferred here and there if required, at little cost. It is the question of first cost that most affects all amateur growers, and, if this be moderate, the future expense is of small consideration. A. D.

The Candle Plant (*Cacalia articulata*).—This old-fashioned succulent used to be very popular as a window plant, a purpose for which it is well adapted, but now-a-days it is seldom seen. I entertain a liking for quaint plants of this kind; they are singular in form and easily grown. Such is the Candle plant, which I have until lately merely regarded as a curiosity, giving it little credit for decorative value. I was, therefore, somewhat surprised to find that it could be grown so as to develop considerable capabilities in that way.

The plant itself is rather singular as regards growth. It has a straight, cylindrical, fleshy stem, of almost uniform thickness, but tapering abruptly at the apex. Its leaves, which are produced upon the current season's growth are deeply lobed, and the whole plant is of a clear glaucous green, and covered with a delicate powdery bloom. At the commencement of the summer the leaves die right off, and this is the time to form a specimen, which may be effected in the following manner:—Take a 4-in. or 6-in. pot, drain it well, and fill it with a good, light, free compost; in this insert the stems, putting several of the longest in the centre, and arranging the remainder somewhat irregularly, according to their length, finishing off by placing a row of the smallest round the edge of the pot. There will be no difficulty in finding stems of the required height, as some will be composed of several joints, the growth of successive years. Place the plant in a greenhouse or frame, or in a window in the full sun, and keep the soil moist; they will soon root and begin to grow. By the beginning of winter we shall therefore have a very pretty and unique specimen, which will be a source of pleasure the whole winter through. It thrives well in a window, and requires but little attention, bearing, without apparent distress, any neglect in the way of watering to which it may be subjected. Although the flowers are by no means showy, they acquire some little value from the fact of their being produced in mid-winter, when blooms of any kind are so welcome. I would recommend any of your readers who may not know it to give it a trial; if treated as described they will hardly fail to be gratified. I am strongly inclined to believe that this plant will again become popular, as the tide of fashion appears now to have set in in favour of plants of a succulent character and easy culture.—J. CORNHILL, *Byfleet*.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

***Primula sinensis coccinea*.**—I procured a packet of the seed of this *Primula* last spring, and have now many plants of it beautifully in bloom, some of them being quite scarlet in colour, and well deserving the name *coccinea*. They were grown in a cold frame all summer, and kept near the glass, but they were raised and kept in a warm frame until they had become established in 3-in. pots.—H. HILLMAN, *Fenay Hall, Huddersfield*.

***Crassula lactea*.**—I have grown this rather largely this season, and I can endorse all that "S." says (Vol. XIV., p. 577) in its favour. Its flowers, looked at individually, remind one of those of an *Ornithogalum*. I grow it in loam, leaf-mould, and sand, to which is added just a sprinkling of lime rubbish. During the summer months the best position in which to place it is on a shelf fully exposed to the sun, watering it sparingly. Early in September it will require more water, and it should be transferred to a light, airy house early in winter, where the temperature does not exceed 45° at night.—A. HOSACK, *Ragley, Alcester*.

Raising Ferns from Spores.—All the small-growing Ferns, including *Gymnogrammas*, *Adiantums*, *Cheilanthes*, &c., are raised yearly from spores by thousands in Mr. Ley's nursery at Croxdon. The fertile fronds are laid on stages, on which have been placed a few inches of fine soil. No bottom-heat is applied, except that which is furnished by pipes running round the house under the stages; neither are bell-glass or lights used, except for very rare kinds, and seldom have I seen so many seedlings as are now to be found in this nursery. When large enough to handle, the young plants are pricked off singly into thumb pots, and placed on shelves near the glass, where they grow bushy and strong, and are soon ready for shifting into large pots for table or window decoration.—S.

***Sparmannia africana* in Winter.**—Now that greenhouse flowers are somewhat scarce, it may interest some of your readers to be reminded that the *Sparmannia africana*, one of the easiest of plants to manage, and quite free from insect pests, is now in bloom.—A. K., *Eastcott Cottage, Finner*.

***Schizostylis coccinea* Planted Out and in Pots.**—"K.L.D." (p. 577, Vol. XIV.) evidently failed in getting good results from planting out this plant by following a wrong method, and succeeded in the pot culture by doing it well. If the suckers are planted out in the autumn singly, 3 in. apart, and in rows 9 in. apart, they will form strong flowering plants by next autumn, with one-tenth of the labour bestowed on pot plants. The strongest should be lifted for house decoration not later than the end of August, and potted ten or twelve together in good soil, after shaking off all the soil and removing all the suckers for replanting for the next year's supply. The pots should then be placed in the shade for a few days and kept well watered, and by the end of October every plant will be throwing up a flower stem, and the foliage will be everything that could be wished.—T. B.

TREES, SHRUBS, & WOODLANDS.

GOLDEN-LEAVED CHESTNUT.

(CASTANEA CHRYSOPHYLLA.)

CAN any of your readers give some account of the growth of this tree either in England or Ireland? I hardly expect to hear of its existence in the north. There is a specimen here 20 ft. 3 in. in height, and with a growth of 17 in. at 3 ft. from the ground. I have, unfortunately, no record of the date of planting, but, as it was purchased soon after its first introduction by Messrs. Veitch, it cannot be less than twenty years old. It is planted on a sheltered bank of the old red sandstone, in a soil and aspect highly favourable to growth and protection; it is in fine condition, making a good annual growth, the bark of the stem clear, smooth, and healthy. Hitherto, I have been unable to discover a single perfect seed among the numerous "burrs" which it bears annually; nothing but the empty husks of a miniature Chestnut, about the size of a Pea, is to be found. On a still day this tree, with its small, glossy leaves, might well be mistaken for an evergreen Oak, but if there be any wind the waving branches reveal the powdered-looking, golden under surfaces, from which it has acquired its specific name. I have failed to meet with it in the collections I have visited, though I have often heard of its having been planted and having died. I should be glad to hear of any place where it has succeeded, with dimensions, &c.; perhaps some of your readers may be able to give an account of it as it appears in its native habitat. The description of it in Nuttall's supplement to Michaux's "North American Sylva" is meagre and uncertain. He states, that it grows from 20 ft. to 70 ft. high, that its leaves are 4 in. or 5 in. long (here, they are little more than half this length), and that it is said to be common at the Grand Rapids of the Columbia. He did not meet with it himself, and he says that the species rests entirely on the authority of Douglas. It is a tree well worth growing, but from its apparent rarity I should suppose either that it had not attracted the attention of arboriculturists to any great extent, or that it was difficult to please in the matter of soil, aspect, &c. It has been planted here sufficiently long to prove its hardiness, and now, after a severe frost, it seems in as good condition as before.

DUCIE.

Tortworth Court, Gloucestershire.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS

Beeches and Underwood.—To my last note (Vol. XIV., p. 579) allow me to add that I find large old Yews and Hollies growing close to the bole of very large Beeches, which must have been planted contemporaneously. In many cases Rhododendrons are close to the bole, 6 ft. or more high, and they might have been much higher, but they are topped over every year for game cover. These may be seen near the carriage drive from Kelso to Floors, yet "J. S. W." says he knows the Floors estate well, and informs us that there is no such thing there as underwood under Beech. As for the Ivy, Laurel, and Portulags, they are quite as thriving, but the rabbits eat these in severe weather.—HENRY KNIGHT.

— Beeches grow here plentifully, and under the greater part of them there is not a vestige of underwood, but in one of the woods there are a good many Beech trees, under which Holly has formed a good underwood, growing luxuriantly and healthily. I may add that the Hollies are growing close up to the trunks of the Beeches.—J. JEFFREY, Ross Carbery, Co. Cork.

— Most of the writers on the practicability of planting shrubs and other plants under Beech trees seem to ignore the fact that Beech trees, when in a cultivated form, often grow on soils widely different from each other, and only occasionally in the kind of soil which they would prefer if in a state of nature. When in the latter position, on the dry chalky downs of the southern counties, a sort of a wild, disorderly shrub called the Way-faring Tree is often associated with Beech trees and Beech scrub. It is, I believe, a *Viburnum*; its foliage has a downy appearance, and in a mixed plantation, where Beeches occupy the same position as other trees on a soil at variance with that above alluded to, the undergrowth does not differ much from that growing under other trees; and I have seen the surface covered in spring with a dense bed of the bright-foliaged and equally bright yellow-flowered Pilewort. At other times a sort of short

wiry Grass takes possession of the place. The Rhododendron is not often found under Beech trees; not that the roots of the Beech are more pernicious than those of Elms, but the Beech is seldom planted on soils suitable to the Rhododendron, the latter associating more with the Birch and the Scotch Fir; and amongst them I have seen Rhododendron seedlings struggling successfully with the long Grass and coarse herbage and succeeding in attaining a large size, but I should doubt if any one ever saw the Rhododendron reproducing itself under Beech trees growing on a chalky subsoil. Possibly amongst shrubs the different species of *Rhus* might succeed better than most other plants. The *Acouba* usually thrives as well as most evergreens under trees, but I have seen young Yews spring up under trees of all kinds on a moderately dry soil, while on a stiff one Hollies often do better; and Mr. Thomson (p. 571, Vol. XIV.) is right about Ferns thriving up to the very collars of Scotch Firs, but the soil must have been congenial. I have also seen a Scotch Fir plantation almost overgrown with *Pyrola uniflora*; a *Plane* often grows in wet clays than in the usual dry habitats of the Fern. Bulbs of many kinds growing freely underneath trees and bushes are the exception to the rule. I once knew a plantation of Coppice wood (mostly Hornbeam) which resembles Beech very much. The soil was of a medium character—not very dry nor yet very wet—and that was so densely grown over with *Dafodils* that it was called "Dilly wood" by the country people; and I know of a meadow or rather a Grass orchard where the Snowdrops prevail to such an extent that they have to be mown over in spring, otherwise they would spoil the Hay. The character of the soil, therefore, ought always to be taken into consideration where planting either under trees or in open situations is contemplated.—A RETIRED GARDENER.

— Having lived in the immediate vicinity of large Beech woods for some years, I can most positively assert that, as a rule, no underwood will grow beneath their shade. In the centre of the large woods the ground is perfectly bare. If the trees are rather thinly scattered, Brambles will grow pretty freely, and just at the edge of the wood there is generally a fringe of Maple bushes intermixed with a few Ash saplings, but in the centre of a wood of any size, or under the shade of a large Beech tree even in the open park, it is not much beside the mark to say no underwood will grow. Two local terrestrial and parasitical Orchids grow freely very often beneath the shade of Beech trees, namely, *Serapias grandiflora* and *Listera Nidus-avis* (the Bird's-nest Orchis). *Monotropa Hypopitys* (the yellow Bird's-nest) is also generally to be found in a Beech country, and in our Buckinghamshire and Hertfordshire woods the pretty little Lesser Winter Green (*Pyrola minor*) is often found. Its roots creep like Twitch for yards amongst the flint stones, of which the ground is full, and it always dies when transplanted into the garden.—H. HARPER CREWE.

— Mr. Knight's instance of underwood thriving and flourishing under Beeches, turns out exactly as I expected. Ten years ago he tells us "it was generally thought (at Floors) that nothing would grow under Beech trees," but at that period Mr. Knight began to plant under them, and has continued to do so down till last year, when he planted 2000 large Rhododendrons "on bare spots under Beech trees," and these, and others planted previously, he offers to show as proof that underwood will thrive in such situations. Testimony of that kind, however, throws no light on the subject, as few are so inexperienced as not to know that underwood can be kept up under Beeches by planting it there as often as may be needful, but it in no way alters the fact that while underwood can be grown successfully in plantations of other trees, and, indeed, springs up contemporaneously with the same, and maintains its existence, it simply perishes before the growth of the Beech. As to the exception at Alderly Park, like "Cambrin," I was much astonished to hear that Rhododendrons not only thrive amazingly, but flowered equally well, and even seeded under the Beeches. Of this, we shall, doubtless, hear more by-and-by.—J. S. W.

— The preponderance of evidence on this subject appears to be against shrubs of any kind thriving under the Beech. We have here some fine Beech trees, under which green Hollies thrive equally well, to all appearance, as in open places. These Hollies are from 8 ft. to 10 ft. high, and so dense in growth as almost to hide from view the trunks of the Beeches, and many of them are growing within 1 ft. of the base of the tree. They have not been planted by hand, but have evidently sprung from seeds deposited by birds, or some other agent.—J. ROBERTS, Gunnersbury Park Gardens.

— Having had some experience in planting under Beeches, I have come to the conclusion that it is a waste of time and money. The underwood may look all right for a time, but the hot, drying weather in summer kills it. If, however, it were planted close to the Beech before the latter had filled the surrounding soil with roots, it might grow, for then it gets below the roots of the Beech, the latter being a surface feeder, and this moisture is obtained from below, but

if the underwood be planted on the top of a mass of roots it will die. I last year cut down Portugal Laurels that grew quite up to the branches of a large Beech, and within 3 ft. of its trunk. But they were very old, and, I have no doubt, were planted when the tree was young. We have Beeches, too, that have scarcely a particle of vegetation under them. Our soil is very suitable for the growth of Rhododendrons, being composed chiefly of sand and peat.—H. CANNELL, Felthorpe Hall

—It would hardly be fair to presume that "North Hants," in his attempt to grow Rhododendrons under Beeches, merely had them planted without previously preparing for them some suitable compost to give them a start. This I consider the most essential portion of the work if we are to be successful. What plant is there that we could expect would flourish on soil already exhausted from supplying the requirements of a forest tree. As I am situated in a locality unfavourable to the growth of the Rhododendron (our sub-soil being rock marl, with hardly an average depth of 10 in. of soil), I cannot invite "North Hants" to come and see these shrubs growing under Beeches, but I could show him masses of the Spurge Laurel growing under them. Still, notwithstanding the natural unsuitability of our soil, we have now beds of Rhododendrons, also of Kalmias, Andromedas, Ledums, &c., all flourishing, but to obtain these results the amount of labour has been considerable, much more than that which I ever experienced in establishing Rhododendrons under Beeches.—A. HOSSACK, Ragley.

A CURIOUS ASH.

THE accompanying engraving represents a very singular variety of the Ash, of which two trees exist at Remilly, not far from Metz.



Fraxinus Remillyensis.

M. Carrière has named this variety *Fraxinus pendula remillyensis*. The two trees are nearly close together, and very much alike. They are not less than 65 ft. high, with trunks about 6 ft. in circumference. With the exception of three branches, the tree figured is of pendulous habit. The leaflets on the pendulous branches are broad, and generally very much like those of the ordinary weeping Ash, whilst those on the erect branches are narrow, very taper-pointed, and of a

deeper, more glossy green. As may be seen, the erect branches spring from pendulous ones; it seems to be a case of partial reversion. W. B. HENSLEY.

NORTH AMERICAN WILLOWS.

PROFESSOR C. S. SARGENT, Director of the Botanic Garden of Harvard University, Cambridge, Mass., informs us that cuttings of the following North American Willows can now be supplied by mail to the correspondents of that establishment. They have been grown and determined by Mr. M. S. Babb, of Illinois, who has devoted many years to the study and collection of the genus *Salix*. Applications, indicating by number the species or varieties desired, should be received before February 1, 1879.

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| 1. <i>Salix nigra</i> , Marsh. | 19. <i>Salix tristis</i> , Ait. |
| 2. " <i>amygdaloides</i> , Anders. | 20. " <i>cordata</i> , Muhl. |
| 3. " <i>lucida</i> , Muhl., var. <i>latifolia</i> | 21. " <i>cordata</i> var. <i>refusens</i> . |
| 4. " <i>lasiandra</i> , Benth. | Hort. |
| 5. " <i>longifolia</i> , Muhl. | 22. " <i>cordata</i> var. <i>refusens</i> . Foliis initio tomentosis, |
| 6. " <i>discolor</i> , Muhl. | " <i>capsulis e basi crassa breviter ovato-conicis</i> . |
| 7. " " var. <i>ericeophala</i> . | 23. " <i>pyrifolia</i> , Anders. |
| " <i>Amentia moliter villosa densifloris, foliis subtus rufescenti-tomentosis</i> . | 24. " <i>adenophylla</i> , Hook. |
| 8. " <i>rostrata</i> , Richards, var. <i>obovata</i> , Anders. | 25. " <i>Barclayi</i> , Anders. |
| 9. " <i>rostrata</i> . Forma foliis oblanceolatis basi attenuatis, stipulis semi-ovatis serratis. | 26. " <i>myricoides</i> , Muhl. (se. <i>ricea</i> crossed with <i>cordata</i>) |
| 10. " <i>myrtilloides</i> , L., var. <i>pedicellaris</i> | 27. " <i>myricoides</i> var. <i>angustata</i> . Capsulis primo tenuiter sericeis, demum glabratiss. |
| 11. " <i>petiolaris</i> , Smith. Forma typica. | 23. " <i>myricoides</i> var. <i>subsericea</i> . Capsulis griseo-tomentosis. |
| 12. " <i>petiolaris</i> var. <i>gracilis</i> , Anders. | 29. " <i>rubella</i> , Bebb. (caudica crossed with <i>cordata</i>). |
| 13. " <i>petiolaris</i> . Forma monstrosa. | 30. " <i>candida</i> , Willd. |
| 14. " <i>sericea</i> , Marsh. | 31. " <i>Clarki</i> , Bebb. (petiolaris crossed with <i>candida</i>). |
| 15. " <i>sericea</i> . Forma amentis cylindricis 1—1½ poll. longis. | 32. " <i>Clarki</i> var. <i>subpetiolaris</i> . Foliis subtus demum glabrescens. |
| 16. " <i>sericea</i> . Forma amentis brevioribus ½ poll. longis. | 33. " <i>Clarki</i> var. <i>subcandida</i> . Foliis subtus nivo-tomentosis. |
| 17. " <i>humilis</i> , Marsh. | |
| 18. " <i>humilis</i> , var. <i>longifolia</i> Anders. | |

Mr. Sargent will be glad to receive cuttings of other Willows, including all Asiatic species and forms, in exchange.

Elongation of Tree Trunks—The statement (Vol. XIV., p. 579) from the "College Quarterly," that "the popular notion that the trunks of trees elongate is entirely erroneous" requires qualification. Although they do not elongate by ordinary growth, in many trees, especially Beech, when a double or triple fork takes a vertical direction, the arms eventually meet forming a single stem. I can show several which are doing so. In one the trunk is about 6 ft. longer than it originally was, or rather, the fork is 6 ft. higher up; the lower 2 ft. have thoroughly banded, there being but a slight seam visible; the upper 4 ft. have united; but it will be many years before they have become one perfect stem, although they doubtless will, should nothing happen to the tree.—C. E. ISHAM, Lansport, Northampton.

***Pyrus sinensis*.**—This sub-evergreen is well worth planting as a spring-flowering park tree. Its foliage is large and glossy, and it is a strong grower. Its fruit, I believe, is worthless.—G. B.

***Cornus Mas aurea elegantissima*.**—Amongst variegated deciduous shrubs this is quite a gem, its rich and varied tints being hardly inferior to those of some of the best variegated stove Crotons. It is a new plant, and as yet rather expensive, but, being really good, it will be sure to give both pleasure and satisfaction.—G. B.

Holly Berries.—These are scarce this winter: they are now *nil*. The fieldfares and other birds have made a clean sweep of the lot. Old berries and young have all disappeared, and seldom has a white Christmas been so little relieved by scarlet berries or colour of any sort. Should the present severe weather last, the birds will have a sorry time of it soon, for Hips and Haws have all disappeared, as well as the Holly berries; even Acorns, which were almost the only fall crop of the past season, are going fast under the combined onslaught of the pheasants and the pigeons, which have crowded the woods in swarms for the past eight days after the Acorns.—D. T. FISH.

ROSES.

NOTES BY AN OLD ROSARIAN.

As these papers are written for amateurs (meaning by that not amateur exhibitors, but for those who love the Rose, and who value it for its own sake, and not for the honours it may bring them), I must say that the manner in which it is grown is too often neither creditable to the possessor nor fair to the flower. Here is the character of Rose growing as I have seen it over and over again. There is probably a Grass plot or lawn, or whatever term it may be dignified by; around this a piece has been dug out of the soil at intervals; in this has been planted a row of tall standards, which are elegantly supported by green stakes, and on the top of this standard is, or was, a head of some 2 ft. or 3 ft. in diameter and a fair amount of bloom. But is there any beauty in a standard Rose tree? Is this the most graceful way in which the loveliest of all flowers can be grown? Are green mops the perfection to which skill and patience can bring our Roses? There is but one place in which they are to my mind tolerable, and that is where a Rose border is made, and they occupy the back row; the front rows then hide the stock on which the Rose is budded; but to place them in a small garden and in a place where they are fully in view is surely subversive of all principles of good taste. But then there is another drawback. The owner has, perhaps, noticed at Rose shows some remarkable blooms, and, of course, he must have the best, and equally, of course, he does not stop to consider whether they are strong-growing varieties or not; and so he gets home his Marie Baumann, Marquise de Mortmarte, or Mademoiselle Marie Cointet (for he could never think of ordering anything but Hybrid Perpetuals), and is surprised to find that, instead of getting larger, the heads of the plants diminish in size until they have vanished altogether. Blanks are left, the beautiful regularity is spoilt, and a whole year must be spent before the row can resume its regular appearance. Another favourite plan is to have a round bed with some half-dozen standards planted in it, and some annuals sown in the soil beneath. This is often done in the front gardens of villa residences, where it is as much out of place and in as little harmony with the surroundings as a huge Deodar (which one often sees) filling up the entire space and darkening all the front windows of the house. Then there are other Roses scattered throughout the grounds, sometimes stuck in the middle of a clump of shrubs, sometimes arranged in beds with other plants. Have I not before my mind's eye now a lovely (?) arrangement which I saw this last summer—a bed of dwarf Roses, and planted in amongst them, of all things in the world, some Chilean Beet? I was certainly not asked by the lady who showed me the garden to admire this, for she pointed it out as an example of the taste of her gardener, in whose hands the arrangement had been left. When dwarfs are grown, I have over and over again seen what seemed to the owner as flourishing bushes, but of which the complaint was sadly made that they did not flower. Nor was this to be wondered at; the poor Rose had long since departed, and the Manetti stock had flourished vigorously, as it always does, and the wood, not being so distinct in its appearance from many Roses as the Brier, the result is as I have indicated. Then no attention whatever is given to the aspect in which the Roses are planted; sometimes it is a bleak and windy spot in the garden, where they are well-nigh blown out of the stocks; sometimes in a dreary border, where the sun never reaches them until late in the afternoon; sometimes in a dry and arid spot, where they are left to shift for themselves and never mulched or watered, and yet their owners are very much astonished that they cannot grow Roses such as Messrs. Paul, or Cant, or Baker, Jowitt, or Hole exhibit at the Great Rose tournaments. As well might an ordinary farmer, who does not stall feed, groom, or carefully house his cattle, complain that his beasts are never so fine as those which he sees exhibited at the Smithfield Club show. None of these results can be obtained without a great expenditure of money, time, and anxiety, and it is unreasonable to expect them without it; but, at the same time, Roses of nearly equal size and beauty may be grown, if attention be given to some of those points which are essential to the well-being of the Rose. There

is one fact which it may seem ungracious to notice, but it is true, for all that, that it is utter waste to attempt to grow the Rose where it comes under the influence of smoke. Many and fruitless have been the attempts to overcome this, and yet withal people do not like to think that they must give up their favourite. Do I not remember how my friend G., who had been living in a cool and open spot, where his Roses flourished well, on removing near a large town, persuaded himself—Ah! it is not like London, and my dear Roses need not be given up. They were removed tenderly and carefully planted, but, alas! do what he would they obstinately refused to grow; they missed the gentle zephyr which used to come and woo them with pure and sweet breath, and the dew distilled in all its purity on every leaflet. Instead of it, clouds of poison-laden vapours swept over them; fierce breezes, that whistled through long rows of houses, caught them; they shrivelled up under these baneful influences, and when I saw G. last, the Roses had all gone and scarlet Pelargoniums had taken their place.

What advice, then, can I give to the lovers of the Rose whose ambition it is to have a few good Roses, and who also wish for variety in their gardens? I would, in the first place, strongly recommend the rejection of all standards; independently of their ugliness, there are other reasons which I think should insure their rejection in small gardens; the sap has to travel a long way up, and unless they are in thoroughly good Rose soil, which is not very often the case in small gardens, sufficient nourishment is not conveyed to the scion, and hence feebleness and death take place, and a gap amongst standards is more noticeable than amongst dwarfs, amongst which, too, deaths are not so likely to take place. Then as they do not throw out so many shoots, unless they are very carefully watched the worm in the bud attacks them and the bloom is destroyed; doubtless hand-picking will remedy this, but it is not everybody who can spare the time for that, and as regards abundance of bloom, as a rule, we must claim it for dwarf Roses.

Then, I would say, be careful as to the position you choose for your Roses, and, if possible, give them a place to themselves. I do not mean a Rosery, a grand place with trellised arches and elaborate arcades, but even if it be only two or three beds, by all means endeavour to keep them to themselves. The Rose will not brook nursing with other flowers, and no real lover of it will care to see it lowered by a plebeian mixture. Even when we cut our Roses we do not care to see them mixed up in a bouquet with other flowers; we prefer putting them in specimen glasses or vases by themselves, wanting nothing but their own foliage to set them off. It must not be forgotten, too, that Roses suffer very much both from wind and frost; and hence, if a position can be given to them which is sheltered and, at the same time, not confined, it should unquestionably be done. Dwarf Roses do not suffer so much as standards from either of these foes; they are not so much exposed to the wind, and it is comparatively easy either to mulch the beds in frosty weather or to place some Fern or small branches of Spruce or Laurel amongst them; but they do not like a confined space; it generates mildew and Orange fungus. As it is not in every small garden that these requirements can be met, the best must be made of circumstances, and the spot most in accordance with these conditions chosen. I have seen as healthy and fine plants, and as good blooms, in some small suburban gardens as I have seen anywhere, and keeping these in view, and remembering the lamentable shortcomings I have seen in other gardens, I wish to show how it is possible for the lover of the Rose to enjoy his favourite flower. In my next paper I hope to enter on the question of stocks and soil, both very important elements in successful Rose growing.

DELTA.

Souvenir de la Malmaison Rose.—Can any Rose grower explain how it is that this fine Rose is nearly always malformed and comparatively useless early in the year, so many of the hearts being hard and green or black, while in the autumn almost every flower is perfect in form, and far more delicate and elegant in bud than it is early in the season? Can it be that there is an excess of vital force early in the year, and that, as this gets expended or used up, the buds get fined down, and the Roses grow into proper form? This rather receives confirmation from the fact that plants on strong soils are, as a rule, more grossly malformed than those on light and poor

soil, though it is seldom, indeed, that the earlier crops of *Roses* escape malformation, and equally rare to find imperfect flowers on the *Souvenir de la Malmaison Rose* in the autumn.—D. T. Fish.

FLOWER FORCING IN MARKET GARDENS.

HYACINTHS, TULIPS, AND NARCISSI.—The quantities of these forced every year are immense. One grower uses 160,000 *Hyacinths* and 10,000 *Tulips*, another grower 70,000 *Hyacinths* and 50,000 pots of *Tulips*, yearly, and others in proportion. The bulbs are all, of course, imported from Holland, and as soon as they are received in autumn they are potted into 6-in. pots, placed in square beds out-of-doors, and thickly covered over with cocoa-nut fibre; this, being light, can easily be removed, so that the most forward bulbs may from time to time be selected as required for forcing. Good growers always endeavour to send a few dozen pots of *Hyacinths* to market the day before Christmas. There is then a ready sale for them at good prices, sometimes as much as from 20s. to 30s. per dozen being paid for them. For this purpose the bulbs are placed in a gentle bottom-heat in a warm and partially dark house until their flower-heads show themselves, when more light is gradually admitted until they are subjected to every possible ray that can be secured. In this way successive batches are continually being brought on until the end of April, after which time *Hyacinths* are nearly over.

Tulips are placed in shallow wooden boxes, and in these they remain until their flower-buds can be seen, when they are lifted and potted, four or five in 5-in. or 6-in. pots, using good sandy loam for the purpose. The sorts of *Tulips* principally grown are the scarlet, rose, and white *Van Thols*, the yellow *La Pluie d'Or* or *Golden Prince*, and the common single *Van Thol*.

Roman Hyacinth.—This charming early-flowering plant is largely grown by nearly all market growers. The bulbs are imported from France, Holland, and Belgium; and in some seasons, when Continental growers anticipate a larger demand for roots than the supply is well able to meet, very high prices are often demanded for them from English growers. Notwithstanding this, they are extensively cultivated, and invariably realise good prices in Covent Garden, their sweet-scented, pure white blossoms being so much sought after just at a time when good flowers are comparatively scarce. There are few bulbous plants that will bear rapid forcing better than this *Hyacinth*, and few that better repay the little trouble which they incur in bringing them into bloom. From the end of October to Christmas there is always a good sale for *Roman Hyacinths*; and any one visiting Covent Garden at that time of year may see large vases and glasses full of fine large spikes of flowers, waiting to be consumed in the making of bouquets and other floral devices. Another kind closely allied to this *Hyacinth*, and indeed one that may be termed a blue-flowered form of it, is grown as a succession crop, but coming in as it does a month or so later, and the blossoms being coloured, they do not fetch nearly so high a price as the white ones. *Roman Hyacinths* are brought on in successional batches, the bulbs being put thickly in boxes as soon as imported, and placed out-of-doors under a 6-in. covering of spent Hops or Cocoa-nut fibre. When the shoots are 2 in. or so in height, the boxes are removed, put into a little warmth, and snowy flower-spikes come up directly.

Narcissi.—All kinds of these are grown extensively in orchards, near old walls and in other bye- corners, and

their blossoms are always desirable; amongst the many kinds that find their way to market, none are more beautiful than the *Paper-white Narcissus* (*N. papyraceus*). Its flowers are produced naturally in February and March, and, being small and of the purest white colour, they are highly esteemed for bouquets and other decorative purposes. The *Pheasant-eye Narcissus* (*N. poeticus*), too, is very pretty; it comes in later—say, about the first week of April; but then flowers are getting plentiful, and it is not so much thought of as it would be were it produced earlier in the season. After this comes its beautiful double variety. Immense bunches of both kinds may be seen on the stalls, and in market women's baskets, &c., and are suitable for those who trade in second or third-class flowers. Great piles of the common yellow *Daffodil* of our woods may be seen at every turn in the market in spring, as well as the choicer kinds of our gardens. The latter generally come from places where the bulbs are grown in quantity for sale. Most of the bulbs of the *Narcissi* which are forced are imported from Holland; they are chiefly grown to supply cut flowers. The *Paper-white Narcissus* is the first to bloom; then follows the double *Roman*, with five and six and more large double flowers on a truss; *N. gloriosus* comes in afterwards. The bulbs attain great strength during the time they are hidden from view under a heavy coating of rich fertilising material, and their blossoms are always in great demand. Immense quantities of flowers of *Narcissi* of nearly all species and varieties are supplied to Covent Garden from bulb nurseries, the removal of the blooms being said to benefit the bulbs, and the money obtained for them where large quantities are grown is considerable.

CROCUSES.—These are not forced in very large numbers but are grown extensively between fruit trees. They are planted on raised beds of good rich soil, and when they come into bloom are lifted in little clumps, their roots tied in Moss, and placed in boxes for market. The common yellow, blue, and white are the kinds principally grown, and to see the beds—which sometimes occupy more than half an acre of ground in one place—in full bloom is a sight better imagined than described.

LILY OF THE VALLEY.—Few flowers are more universally admired than the *Lily of the Valley*, and few are more remunerative to the grower when he can get a ready sale for them. The earliest plants are usually got into bloom about Christmas, when good potfuls sell retail for 10s. 6d. each in the market. For this purpose single imported crowns without any earth adhering to them are used. These are selected by the Belgians and Dutch, who grow them extensively; and all are warranted flowering crowns. A large quantity of these can be packed in a very small compass; therefore the freightage costs but little, and the roots themselves, when bought in quantity, are very cheap. These are placed as soon as received in strong bottom-heat, and when nearly in bloom they are potted, together with a few roots grown for their leaves, in 5-in. pots; they are well watered, and, after being hardened off a little are taken to market. Sometimes, however, the rapid forcing causes them to come "blind;" but good, plump-looking crowns can generally be trusted. Ferns are sometimes mixed with the bulbs in potting, and sometimes the beautiful blue-flowered *Scilla sibirica* is employed with good effect. Some growers force *Lily of the Valley* early for cut blooms alone; and where they can sell all they grow, this plan is perhaps the most remunerative, as at Christmas single sprays fetch from 6d.

to 1s. each. Later supplies are grown from imported clumps, which contain from twelve to twenty buds; these are potted in 5-in. and 6-in. pots, and placed under cover, a quantity being introduced at a time as required. Market gardeners always put as large clumps of crowns of Lily of the Valley as possible into the pots. If they come up well, and the shoots are too thick, all superfluous shoots are removed when they are about 3 in. high and have formed their flowers. As many roots as possible are obtained with each shoot so removed, and six or eight of them are potted together into other pots. A little soil is placed on the surface of the pots from which they were taken in order to fill up the vacancy, and the whole is placed in warm quarters to develop their flowers and leaves perfectly. The thinnings never make good plants; on the contrary, they fail even to make a single rootlet; but the sole reason for potting them is that they produce a few sprays of cut bloom, which, early in the year, fetch high prices, and it being found that as much money can be obtained from a moderately well-filled pot as a thickly-filled one, thinning of the crowns becomes a profitable practice. One grower uses as many as 6,000 clumps of Lily of the Valley yearly, in addition to several thousand single crowns imported free of earth. Indeed the weight of roots used by him every year exceeds four tons. Outdoor flowers of Lily of the Valley brought to market from the country are generally green and poor compared with those produced either early or late on imported plants. The method of growing Lily of the Valley adopted by the Dutch growers is somewhat different from that practised near London. They dig up single crowns and tie them up in bundles of ten or twelve together, and plant them in a soft loamy soil, well manured with cow manure, at a distance of 10 in. or 12 in. between the bundles, in a shady position. The plants are not disturbed for three years, when they will be found to have formed good clumps. Plants thus treated, are remarkably well adapted for forcing. For this purpose they are planted in pots of suitable size, covering the crowns with an inch or two of soil, and then the pots are plunged for about a fortnight in Cocoa-nut fibre. By that time they will be well rooted. The pots are then plunged in Cocoa-nut fibre in a hot-house, covering them to a depth of 5 in. or 6 in. They remain there until the plants appear above the surface of the fibre, when the pots are taken out and put for a few days in a warm place, after which they are removed into a light house to expand their flowers. C. W. S.

A WINTER GARDEN.

A VERY suggestive illustration of what is possible in a winter garden, scarcely differing from an ordinary building, may be seen in the private gardens of the Emperor at Vienna. There an enormous building with only one side (and that not wholly) of glass is planted as a winter garden, and the effect in some respects is superior to anything of the kind to be seen elsewhere. The main lesson, however, that the building affords is in showing how far it is possible to make a beautiful winter garden in a building which is not a glass shed, and which, therefore, allows of the usual architectural treatment. Generally, the most successful winter gardens are those wholly of glass, and we have recommended such as the only satisfactory means of securing a healthy growth and satisfactory results therein. The conservatory in the Botanic Gardens in the Regent's Park may be taken as the model of a good house for the purpose alluded to. Unlike it, the winter gardens we allude to, however, are those in which tubs and pots do not appear, in which the vegetation is planted out, and a natural and artistic effect sought. All those that we have illustrated in

THE GARDEN were houses of this kind. The Vienna winter garden is quite as graceful as any of them, with this difference, that nearly all its plants are out-of-doors during the summer. It is, in fact, an immense "Orangery," in which a large collection of plants is stored in the most graceful and natural way imaginable, with devious walks, little carpets of turf formed of Lycopodium, Tree Ferns, giant Dracaenas, with Ivy festooned naturally among them, and Ferns in abundance. Apart from the question of winter gardens, this points to the fact that we require more courage as regards embellishing semi-lighted places with plants, not for a day or a week, but a season. Numbers of subjects that make their growth in summer, whether in or out-of-doors, would not suffer in the least from being grouped in imperfectly-lighted positions, always assuming that a suitable temperature was maintained, and that they were not exposed to injury from gas.

PLATE CLVIII.

STOBÆA PURPUREA.

This is a member of a numerous genus of South African Thistles, or rather Thistle-like plants, for they are more nearly related in floral structure to Senecio than true Thistles. Many of them are exceedingly handsome and noble plants, and *S. purpurea* is perhaps the finest of its genus; but in spite of their ornamental character, few of them have been introduced into our gardens, and those which have have found little favour. This is probably due to the fact that they are scarcely suitable for indoor culture, and to grow them in perfection in the open air some little attention is required, as they are not perfectly hardy. *Stobæa purpurea* is, however, one of those plants which recommend themselves to the genuine lover of flowers. In its native haunts, in the valleys of the Winterberg, Mrs. Barber found it growing in large patches, many thousands of plants growing close together, as if they had been planted in beds, and making a very imposing show. Like our less showy Thistles, then, it is of a gregarious nature, and it is very effective in masses, though single plants in a mixed border are equally prominent. In a wild state it grows from 2 ft. to 3 ft. high, and doubtless in a rich soil it would grow higher. Nearly all the *Stobæas* have yellow flower-heads, but our plant has them of some shade of violet, purple, or lilac, and in the Kew Herbarium there is a specimen of a variety having pure white flower-heads. In Bentham and Hooker's "Genera Plantarum," *Stobæa* is referred to Berkheya, forming together a genus of upwards of seventy species, all, except one tropical African, natives of South Africa. *Berkheya grandiflora*, a fine yellow-flowered species, was formerly in cultivation, and a figure of it appeared in the "Botanical Magazine," t. 1844; and in the same volume, t. 1788, there is a figure of the comparatively insignificant *Stobæa pinnata*. This is the first publication of a coloured plate of the handsome *S. purpurea*, which flowered in Mr. Ware's nursery last summer, and which was introduced into this country a few years ago by Mr. Wilson Saunders, through the agency of Mr. McOwan, of Yale College, Somerset East, South Africa. W. B. HEMSLEY.

Cupania filicifolia as a Specimen Plant.—This makes a handsome specimen plant, when well managed, for the decoration of the stove or warm greenhouse. It grows freely under liberal culture, and retains its graceful lace-like leaves down to the base. Old plants of it, cut down and allowed to push up a single shoot, soon develop into handsome specimens. We lately saw some which had been thus treated in the Victoria Nursery, and which are now from 6 ft. to 8 ft. high, and well furnished with foliage down to the pot. This plant is here very successfully propagated (a somewhat difficult operation as a rule), and grown into neat little plants for table decoration.—S.

Cycas intermedia.—This noble plant is much better adapted for the decoration of the conservatory than any other *Cycas*. Its leaves are long and graceful, and of a pea-green colour. It is also said to be harder than *C. circinalis* or *C. revoluta*, and, being less stiff and formal in habit, it is preferable to either of them. I lately saw fine examples of it in Mr. Williams' nursery at Holloway.—S.

GARDENING FOR THE WEEK.

Stove.

There is a considerable difference between the stove proper—that is, the house devoted to heat-requiring plants, wherein a sufficient temperature is kept up to preserve in a growing healthy condition those that come from the hottest regions, of which, for example, may be taken *Ixoras*, *Dipladenias*, *Combretums*, *Crotons*, *Anthuriums*, *Artocarpus*, *Diefenbachias*, *Marantas*, *Nepenthes*, *Pandanus*, *Cyano-phylums*, *Spheroxygnes*, and many others of similar nature—and the intermediate house, where a temperature is maintained enough for such plants as do not require quite so much heat as the genera already named, but yet need keeping considerably warmer than true greenhouse plants. It often happens that an attempt is made to keep through the winter plants that at all times of the year need a high temperature, in houses where really no more heat is at command than is requisite for intermediate subjects; the result of this is, they are, during the winter season, so checked that the spring is far advanced before they get into a decent healthy growing state, making comparatively little progress, and, in the case of plants grown for their flowers, producing a correspondingly small amount of bloom. In place of this I have always found it best, where there is not the means of keeping up sufficient heat, to confine the cultivation to those plants that do not want more than an intermediate temperature. The stove should now for some weeks be kept in the night at from 65° to 68° or 70°, according to the state of the weather, with a rise by day of 5° or 6°. Frequently, when it is clear and sunny, the thermometer will for a short time run up a few degrees higher than this. The intermediate house will do some 10° lower, day and night.

Fermenting Material.—Nothing is more conducive to a healthy growing atmosphere than a good body of fermenting material present in the stove, independent of whether it is the practice of the cultivator to plunge the greater portion of the plants, or only such as bottom heat is found indispensable for. With this view the requisite quantity of tan, than which nothing is so enduring in the heat it keeps up, or leaves, if they are used, should be at once got in. In clearing out the old material care should be taken to remove the whole, so as to get rid of worms, that are almost certain to have more or less got possession of it, and from which they find their way to the balls of the plants, and do much injury. Advantage should be taken to hot wash the inside of the pit as well as all other brick-work surfaces in the house, also to give a thorough cleaning to the glass and woodwork, by which the greatest possible amount of light will be admitted to the plants. Where the heating power happens to be deficient, a considerable body of tan, as already described, will, in a short time from its introduction, increase the temperature of the house several degrees, and maintain such until the weather is warmer by the increase of sun-heat.

Ixoras.—Any plants of *Ixora* that were not cut back after flowering in summer—which is much the best time for the operation—if there appears a likelihood of their getting into a too straggling condition before the end of the season, may be shortened back; but in doing this it must be borne in mind that it will a good deal delay the time of their blooming. Where several of a kind are grown, if a portion be thus treated, a succession will be secured.

Dipladenias.—These, when they have attained sufficient size and strength, should be freely cut back every year, reducing the shoots (almost like what is done in ordinary Vine culture) to a little beyond the point to which they were shortened the preceding year.

Bougainvillea glabra.—This, the most useful and manageable of the genus, should be started early, by which means it will flower two or three times during the season. In pruning it, it is better to remove the weak shoots, retaining those that are sufficiently strong to push stout blooming growths. If the plants have been, as they ought, well ripened up and dried off by withholding water at the roots until the leaves have fallen, they should now be thoroughly soaked in a tub or bucket containing as much tepid water as will admit of the balls, pots and all, being immersed for twelve hours; this is far safer than simply giving water in the ordinary way, which is often so deceptive as to only moisten a portion of the soil, in which case they break weakly, the cause often not being discovered until a good deal of time is lost.

Allamandas should be at once cut back in the case of full-grown specimens, removing, as with the *Dipladenias*, the greater portion of the preceding summer's shoots; for if too great a length of these be left, the plants get crowded with useless wood. I have found it best, when these plants have attained their full requisite strength, to re-cut at the time they are pruned, as in this case they require so far shaking out as to necessitate disrooting to one-third or

one-half the whole extent of the previous season's formed roots; and if this be not done until the plants have broken into growth, a considerable portion of the young shoots started will not make further progress. As they, like the *Bougainvilleas*, will have been allowed to get quite dry at the root, they should be similarly soaked before potting, so as to insure the whole of the soil being moistened. *Allamandas* grown as roof climbers should be in like manner cut back, in extent according to the size they have attained, and the space they are required to cover; and, if planted out, must have some of the surface soil removed and replaced with new, to which a good quantity of manure has been added.

Shrubby Clerodendrons.—These, including the different kinds of the *C. fallax* tribe, should, in the case of old plants, be well cut back, reducing them to 1 ft. or so above the collar, otherwise they get naked and unsightly. Previous to pruning, let the soil get comparatively dry, keeping it in this condition until they have broken freely.

Gloxinias.—By judicious management, these may be had in flower for a considerable portion of the year, and when treated in the manner that gives them the stout, robust character which admits of the flowers standing satisfactorily in a cut state, they are most useful for this purpose. With this object, a few of the tubers earliest put to rest may be started, shifting them into not too large pots, and, if possible, putting them on a shelf or other position where they will be close to the glass, as upon their having all the light possible depends the full amount of usefulness being secured, either for general decoration or for cutting, as already alluded to.

Gardenias.—If the plants have been well cared for the preceding season, and are clear from insects, they will furnish a long succession of flower through the spring, keeping them well up to the glass, by which means their advancing buds will be much less likely to drop off—a circumstance that frequently occurs when they are subjected to a good deal of heat, with a view to getting them on early.

Pentas carnea and P. rosea.—These continuous and free-flowering subjects, if well attended to and grown in moderate warmth, will keep on flowering from every bit of growth they make.

Bouvardias.—Where sufficient plants exist, and there is the convenience of keeping them in different temperatures, a portion should occupy the lightest position in the stove, with their heads close to the glass, as upon this, like many other winter-flowering stove subjects, depends their ability to endure when cut. If well-grown plants with strong shoots are secured, these, by keeping thus warm, will continue making growth and bearing flowers for a long time, as, when the bloom produced from the leading portions of the shoots has been cut away, they will keep on breaking from the lower eyes, in this way yielding a succession.

Plumbago rosea and Eranthemum pulchellum will, if the plants have been strong, continue producing flowers from the weaker growths after the leading shoots are over, and will be benefited by a little weak manure water.

Intermediate House.—Where the means does not exist of keeping the warmest plant house above an intermediate temperature, such operations as the foregoing should be delayed for some weeks yet, so far as the shaking out and potting of any plants go, inasmuch as these matters should not be carried out until there is enough heat to at once excite growth.

Destruction of Insects.—In plant growing there is no such thing as an immunity from insects, as, with the utmost vigilance, some of the less objectionable kinds are certain to be troublesome from time to time; and with the most injurious species, such as mealy bug, where these exist it is impossible to keep any collection of plants, large or small, in a condition that will give the best results in general appearance and the quantity of bloom they produce, without either absolute extermination, and afterwards the greatest care, so as not to introduce affected plants amongst the stock, or by continual application to keep them so thinned that the injury they inflict will be reduced to a minimum. As it is at this comparatively dormant period that insects can best be coped with, it may be well to remind those in charge of collections of plants, that the hours spent in the destruction of these pests at this time will be more effectual than a corresponding number of days when the season is further advanced and their increase much greater. Whatever insecticide is used, it should be such as admits of the whole of the affected plants above the soil being dipped or syringed with the liquid so as to reach every part, bark and leaves. I have no faith in any but liquid applications for the worst descriptions of insects, such as bugs and scale, as with anything in the form of dust or powder there is no certainty of its reaching the whole surface of the plants; neither are such liquids that do not admit of being used in sufficient quantity to get

to every part of the affected specimens of any good except where there happens to be only a very few small plants infested, as their use involves too much labour and uncertainty. Where anything like an attempt is to be made at complete eradication, not only should those plants that are known to be affected be subjected to the cleansing process of immersion or syringing, but every plant, large or small, on which the insects can find food or shelter, should also be similarly treated, and the operation repeated continuously until there is something like a certainty of both eggs and mature insects being destroyed.

Forcing Pit.—Upon the sufficient size and right construction of this structure depends, in a great measure, the ability to keep up a supply of cut flowers now for some months where there is a considerable quantity required, for with such plants as are brought into flower in heat, through the winter more particularly, those that after the first production of bloom will immediately make successional growth and flower from it, unless this growth be made in a thoroughly light house, with the heads of the plants elevated as near the glass as they can be got, the bloom is certain to be worthless for cutting from its soft, flimsy character. It is through imperfect realisation of this that many winter-grown flowers receive an undeserving character for being of little use, when the fault rests in the way they have been grown and not in the plants themselves. The temperature kept up here should be from 65° to 70° in the night, with a rise of 10° by day, according to the weather.

Tuberose.—As these are brought on in succession, with a little bottom-heat if possible in the first instance until they have got their pots well filled with roots, they should be placed with the points of the shoots close to the roof, lowering them as they advance in growth. Do not over-water, but give sufficient to keep their somewhat moisture-impatient roots in an active condition. Withhold water altogether from the successional bulbs until it is certain that they have pushed a good amount of roots.

Lily of the Valley.—Bring in sufficient quantities of this to keep up the supply, plunging them in heat until the shoots have made considerable progress, after which expose them gradually but slowly.

Lilacs.—Where these are forced in quantity and there is no place where they can be kept perfectly dark in the way necessary to produce the blanched flowers, a few may be introduced to the forcing pit, but in all cases the plants should consist of such as have been previously prepared and grown on for the purpose, as ordinary bushes if dug up have generally an unsightly appearance, and bear little flower compared with their size. Where a forcing pit or house, such as here described, exists, and which is an absolute necessity where large supplies of winter-forced flowers are needed, and the object is to have them with the least expenditure of fuel and labour, as well as to obviate the unavoidable compromise in treatment that becomes necessary when brought on in an ordinary stove, the annual winter-blooming occupants, of which that may be said to consist of an annual growth prepared through the summer, will find their best and most suitable place here.

Hyacinths, Narcissi, and Tulips.—These, especially the two former, must be brought on in succession, but they require a cooler position than in the house under consideration.

Potting Soils.—The most successful cultivators of pot-grown plants at the present day are fully aware of the absolute necessity of selecting the best, and nothing but the best and most suitable soils for the requirements of the different plants they grow, without which it would have been futile to look for the high standard that has been reached; but, unfortunately, there are very many who do not to the full extent realise the importance of this, and follow the penny-wise course of attempting to grow their plants in any sort of material that is called peat or loam as the case may be. The greatest mistake is committed in respect to the former, by using any description of poor, worthless, material, provided it comes under the name of peat, often of a close, black, hungry character, which, even if the plants appear to thrive for a time, has no lasting properties in it to keep the roots in the required healthy condition; hence the plants never attain the full vigour they are capable of, but go off prematurely. Nothing but the best peat selected and obtained from localities where such is to be had should satisfy the cultivator, and the same may be said as regards loam, only the latter can be had from many more sources. Anything less than this is simply a waste not only of labour, but also in the cost of fuel and the glass erections in which the plants are grown. As the time for potting many plants is fast approaching I could not give more seasonable advice to all desirous of growing their plants well than to procure those soils that are best adapted for the kinds which they cultivate.

Orchids.

East Indian House.—The temperature best calculated to meet the requirements of the many plants from different countries located here may be put down for the night at as near 60° for the next six or seven weeks as it can be got, with a rise of from 6° to 8° by day, according to the weather.

Saccolabiums.—Put these at the extreme warmest end of the house; they will not bear well such a lengthened drying up of the roots as the generality of *Aerides*. Care must be taken that they are not long kept so dry as to cause the leaves to shrivel to any appreciable extent, for should this occur, more of the old lower ones will turn yellow and fall off than is consistent with the ever augmented numbers and increasing size that healthy plants should consist of.

Aerides.—These, like the *Saccolabiums*, should be now at rest; their leaves, being considerably tougher and harder in texture, as well as the plants generally, they are able to bear a lower temperature than *Saccolabiums*, and can stand without injury a totally dry state of the roots somewhat longer; but if the plants have been grown under conditions of light, air, and a healthy, not saturated, atmosphere, they will show plenty of flower-spikes without too much drying up, and the temperature above indicated will not induce them to push flower too soon, or bring the bloom on earlier than required by those who may wish to somewhat retard it.

Vandas.—These will bear keeping dry for a time, but great care must be taken not to carry it too far, or the loss of numbers of the lower leaves is certain to follow. To this cause, coupled with the plants being grown under conditions that have made the leaves soft and deficient in substance, is directly attributable the unsightly naked state in which they are too often seen.

Phalænopsis.—Consisting, as they do, of little besides roots and fleshy leaves, an undue amount of drying at the roots is fatal to them ever increasing in size, as is their wont, for when subjected to this, the loss of leaf at the base is generally equal to what they have made at the top during the current season, but though, as I have already urged with the preceding family of plants, the necessity for care in seeing that a totally dry condition of the material in which the roots are placed is not carried too long when water is given, it should by no means be applied in such quantities as to wet it to the extent requisite in summer during the time they are making growth, but just a little, so as to bring the *Sphagnum*, &c., to that state best described as being neither wet nor dry.—T. BAINEs.

Flower Garden.

Auriculas.—A grower of these, writing from the north, says, "My frames are covered with a thick blanket, and over that 1 ft. of snow," and then he asks, "What shall I do with them?" The answer is, let them alone. If the pots are frozen, it matters little whether the frames are closely shut up or not. When the frost disappears, the plants should be looked over, and all decayed leaves removed. Only water the plants if the soil in the pots be dust-dry, but not at all during frost.

Carnations and Picotees.—The instructions given for *Auriculas* apply to these, but it is better not to allow the soil in the pots to become quite so dry as that of the *Auriculas*. Of course, it would be injudicious to water at all during severe frost. There will be a number of decaying leaves to be removed, and the soil in the pots should be pressed in a little, if loose.

Dahlias.—It is quite necessary to look over the roots. Decay frequently takes place at the crown. Such roots can be saved by placing them in heat—a very gentle, rather dry heat. It is almost too early to start any of the roots yet; but those who want a good supply of plants from a limited stock of roots will be making preparations for a start.

Gladioli.—Seedlings of these in pots may have been stored away with the soil quite dry, and, if such moisture as it contained has quite evaporated, the bulbs, being small, may not start; but if the soil contains moisture, they will. It is better, therefore, on the whole, to shake them quite out of it. The large roots keep well if each sort be wrapped up separately in paper, and stored in a dry place in a frost-proof room.

Hollyhocks.—Choice varieties of these, potted from the open ground two months ago, should be placed on a shelf in a Vinery or Peach house near the glass. Frost should not be allowed to get into the house, and if placed in a warmer situation, the shoots will be ready by the end of the month to be taken off as cuttings, or to be used for grafting on pieces of roots. The commoner sorts wintered in frames will be safe there for the present with a few mats thrown over the glass during severe frost.

Pansies.—These should be potted into their blooming pots early in the year, but this cannot be done unless the weather is fine. Soil should be prepared for them, and pots also should be in readiness. Pansies like a rich soil, and the best stimulant for them is rotten cow manure.

Pinks.—During frost these require no attention, except to see that rabbits cannot attack them. Make any plants thrown out of the ground by frost firm, by pressing them into the soil with the fingers.

Phloxes, Pyrethrums, Pentstemons, and similar hardy plants in beds, require scarcely any attention during winter. It is a good plan to place some dry manure on the surface of the beds, or a layer of leaves that have lain in a heap since autumn. It is astonishing how severe frosts may be kept out by a very slight protection applied to the surface of the ground.—J. DOUGLAS.

Hardy Fruit.

The late severe weather will have somewhat retarded operations in this department, and, therefore, some energy will be required as soon as a more favourable time sets in to bring up arrears of planting, pruning, nailing, dressing, and similar operations. In the meantime proceed with trenching, digging, draining, and soil carting, and so get the work forward as possible. If not previously done, Strawberry plantations should be "pointed" over, after which mulch them thickly with half-rotted stable manure. Of course, previous to the pointing remove all runners and decayed foliage, and avoid wanton destruction, for though some even recommend moving off the old foliage the practice is not a good one. New Raspberry plantations may be made at any time between this time and the end of March, but the sooner the better, as such a plantation if well made will last for ten or twelve years. The ground should be deeply trenched and heavily manured, i.e., if the nature of the soil demands it. A good loam, inclining to adhesiveness, requires but little manure, but in light, sandy soils Raspberries must be freely manured if good returns be desired. The pruning and tying of established plantations should be done as soon as possible, after which well stir the surface, but do not dig it, and mulch with the best manure at command. In favourable weather Peaches and Nectarines should all be untied or unnailed as the case may be, and after carefully cutting out the long naked branches and superfluous shoots, well wash them with soap-suds, which is best done by means of the garden engine. If the trees, during the past season, have been badly infested with aphides, the most effectual preventive is to have the whole painted with a solution of Gishurst Compound, according to the directions accompanying the same. Apricots are rarely subject to the attacks of aphides or other insects; still, as prevention is better than cure, as soon as pruning and nailing are completed let these also have a thorough washing with soap-suds. Our trees a season or two ago were badly attacked with soft brown scale, which was entirely annihilated by means of the washing here recommended. Cherries, Morellos in particular, are very subject to the attacks of black aphids, and, therefore, strong measures should be taken to ward off such attacks; winter dressing of both walls and trees is, in such a case, imperative. Orchard trees, consisting of Apples, Pears, Plums, &c., may be greatly invigorated by judiciously thinning out any branches that cross or chafe each other, freeing them from Moss and Lichen by dressing them with quicklime or brine. As such work as this can be done in weather, so to speak, when nothing else can be done, any negligence in respect to it is unpardonable. Any trees that are old and worn out should in hard weather be grubbed up and the ground trenched preparatory to planting as soon as favourable weather arrives. Trees that are to be regrafted in March or April had best be headed down at once. All prunings and grubbed-up wood not required for fuel should be converted into wood ashes, which is an excellent manure for all kinds of fruit trees, and, indeed, for almost everything else. If a new orchard is to be formed, the first matter to be considered is in reference to draining it effectually, and this done the whole should be deeply trenched; or, should this be thought too expensive, the proposed distances at which the trees should stand apart should be marked out, and a space trenched for each tree, which space ought not to be less than 8 ft. in diameter.

Kitchen Garden.

Trenching and digging will doubtless have fallen into arrear, and if so these operations should be advanced as soon as favourable weather arrives. Advantage should be taken of hard frost to get all wheeling and carting completed, and also to get manure and vegetable refuse heaps turned over. Leaf carting and clearing up should also receive attention, and hotbeds should be made up preparatory to advancing sundry crops, such as Carrots, Radishes, Potatoes, Peas,

and French Beans. Early Broccoli not protected during the late severe weather will, doubtless, be found to be greatly injured, but late kinds have all escaped; still, it will be advisable in the event of another such a period setting in to protect them with bracken or long litter, and the same remark applies to Celery. Globe Artichokes, where not covered with protecting material at their base, will certainly be killed; some that were not covered have all but disappeared, but those mulched with long stable litter are safe. It will, however, be well to prepare for losses by making a sowing at once, and as soon as they are well up pot and grow them on in gentle heat, finally planting them out at the end of May. Plants so treated will yield a few fine heads in autumn. Having had complaints as to the toughness of Beetroot this season, it was all left in the ground and taken up as required, and the difference to the palate is certainly remarkable, and will lead to our always leaving it in the ground in future during winter, and covering it with bracken. Where there are not frames for the purpose Endive, Lettuces, and Parsley will also require a little protection, and nothing is more handy, neat, or effective than a few straw hurdles or roofing felt tacked to a light framework of wood made of convenient size for moving from place to place. These, supported by inverted flower pots or bricks, not only keep off snow, but many degrees of frost. On the first favourable opportunity a sowing of early Peas should be made; Ringleader and William I. are the two best varieties for this sowing. A southern aspect, sheltered from north and east winds, should, if possible, be selected for them. As soon as they are through the ground they will require protection against the depredations of sparrows, for once the latter get a taste of them, they clear a large quarter of them in a day or two. The best protections are wire guards, but where these cannot be had, stake the rows thickly with short, spray sticks, which will serve to protect them both from sparrows and cutting winds. A small planting of Early Long-pod Beans should also now be made on a warm border, for we find that the earlier these can be had the more they are prized, while, on the contrary, after other vegetables become plentiful they are but little appreciated. Decaying vegetable matter should in all cases, after a thaw, be forthwith cleared away to the manure heap, when, if thrown together and sprinkled with quicklime, it soon becomes a valuable fertiliser, and perfectly inodorous. In order to make some amends for the comparative barrenness of the garden at this season, let all walks and paths be kept in good order, and endeavour to maintain neatness everywhere.—W. W.

Public Parks and Open Spaces.

A few words as to what should be done in these during January may not be out of place. If the frost be not too severe, the digging of borders and plantations should be finished without delay, and in so doing, care must be taken that the roots of trees and shrubs are not injured; for such work no implement is better than a four-tined steel fork. Many object to disturb the soil after trees and shrubs have become well established, but, from long experience, I have come to the conclusion that this is necessary work in populous towns, where the surface becomes coated with deleterious matters, rendering it impervious to air. In carrying out this work, all dead and useless wood should be removed, and where trees and shrubs are too much crowded, it is necessary to thin out and transplant, or take them out altogether. Great care must be exercised in this matter, as the appearance of plantations and shrubberies much depends upon the manner in which it is done. It will also afford a good opportunity for planting trees and shrubs which may be required for filling up blanks. All young trees should be firmly re-staked, and where herbaceous plants occupy borders round plantations, dead and decaying shoots and leaves must be removed, and the protection be given necessary to preserve the roots and crowns from frost. This may be tan, Cocoa-nut fibre, ashes, or similar materials. Trees and shrubs requiring it may be mulched with advantage. This is, likewise, the season for forming new plantations, should the weather permit. Lawns or Grass plots do not require much attention, except where they are in very bad condition, and where they require levelling, re-turfing, draining, &c., of course much of this work depends upon the severity, or otherwise, of the weather; if favourable, however, no better time can be chosen for the purpose than the month of January. Lawns improperly drained are never satisfactory. Drain pipes should be placed in rows at from 15 ft. to 63 ft. apart, and at a depth of from 2 ft. to 6 ft., according to the nature of the subsoil, and with sufficient fall to ensure the water being carried off with rapidity. 6 in. or 1 ft. of brick rubbish, faggot wood, or, in fact, any kind of porous rubble, may, with advantage, be placed upon the pipes before filling in the trench, and should any subsidence occur hereafter, it must be rectified in the ordinary way, by lifting the turf and adding soil. Where breeze or ashes are easily obtainable, 1 ft. in thickness placed upon the ground, about

6 in. or 1 ft. beneath the level of the turf, will greatly improve its texture, appearance, and elasticity. Burnt ballast (burnt clay) will answer the same purpose, and is easily and cheaply made where clay is abundant. If the weather permits, Grass plots may also be cleaned by cutting out rough Grasses, uprooting Dandelions, Daisies, and other weeds. This, if done carefully, will cause no injury to the turf. Surface-dressing, which may consist of well-rotted manure, road drift, or artificial materials, should be spread upon Grass which is in bad condition in consequence of the poorness of the soil, or other causes, and will much improve it. Roads and walks, where made of gravel, must be kept in good condition by frequent rolling, and all channels, gullies, and drains should be thoroughly cleared out, in order that no water may accumulate which would render them unfit for ordinary wear and tear. January is one of the best months for re-metalling roads, or forming new ones, on account of the moist state of the materials, a condition which assists in binding them together. The best kind of stone for the purpose is either broken granite or flints. In re-metalling roads the surface should be broken up 2 in. or 3 in. deep, and from 3 in. to 6 in. of stone should be spread evenly over the whole surface; when this has been well rolled, 2 in. to 3 in. of fine gravel should be put upon the stone, and thoroughly watered and rolled. In forming new roads, after sufficient soil has been excavated to allow of from 15 in. to 18 in. of materials, and the drains laid, from 9 in. to 1 ft. of chalk, or brick rubbish, should be laid down, levelled, and rolled; then proceed as before to form the surface. Roads made according to these instructions will prove most durable carriage ways.—C. DENNIS, *Southwork Park*.

Woodland Work for January.

Those who have hitherto been in the habit of delaying all planting up of their woodlands until the winter is far advanced will have learned a salutary lesson from the enforced suspension of their operations, which took place early in December. We have for years persistently advocated the late summer or early autumn removal of evergreens, and the completion of the transplanting of deciduous trees by the end of November, and the rapid advance which such early removed trees make in the spring, in consequence of the roots having become turgid with the accumulated moisture, and the root-lets having made a considerable start before winter set in, ought to convince the most sceptical of the advantages of the system. The unusually severe weather which has set in while the land was saturated must tell severely upon young trees which had been just removed from warm nursery quarters. Though January is not a desirable month for continuing the work, on account of the frequent sudden changes of the weather, yet where a large breadth of woodland has to be filled up, the forester must avail himself of every open period for planting; he should now select the drier portions, reserving the wetter parts for operating upon in February and March.

Excellent opportunities have already been afforded for the removal of felled timber, which should now be, to a great extent, cleared off. Thinning should still be continued, but, at the same time, it should be remembered that neglected or overcrowded plantations may become permanently injured by too great a clearance or too sudden an exposure at this season of the year. The operation of thinning, like that of pruning, should be gradual, and both require the exercise of much sound judgment. Whoever undertakes the task while ignorant of the fundamental principles of vegetable physiology, must work in a twilight of uncertainty; and though sound common sense may prevent his doing any great amount of mischief, he will fail to accomplish the amount of good he might do if familiar with the principles of his operations. In executing thinnings of plantations, the principal consideration should be the permanent good of the standing timber, as, compared with this, the market value of what is cut down is unimportant. Thinning must be regulated by the closeness of the original planting as well as by the age and size of the trees, the quality of the soil, the amount of shelter or exposure, and the ultimate object of the plantations. Whoever plants thickly must thin early and frequently, or else fail to obtain the maximum amount of profit from his woodlands.

It is impossible to specify any limit for the distance of standards which shall be applicable to all trees; much must depend upon soil and climate. Where the production of timber alone is the principal consideration, the preservation of an unbroken leaf canopy will insure the tallest trees and the cleanest timber; but where it is deemed desirable to cultivate a considerable proportion of strong and healthy underwood, the standard trees should not occupy more than from one-third to one-half of the entire wooded area. Even in close plantations trees should never be allowed to overhang or whip each other. Firs and Pines may stand much thicker than deciduous trees, and during the earlier years of their growth they require much

less thinning; indeed, it is seldom necessary to thin a plantation of Scotch Pine until it is nine or ten years old. In situations where the deciduous trees require to be thinned out at intervals of from 25 ft. to 30 ft. at the age of forty years, resinous kinds may stand at little more than half that distance—say, from 15 ft. to 18 ft. In order to obtain sound timber no branches should be allowed to die back close to the bole. The process of natural pruning, by which the upper branches gradually destroy the lower ones by excluding sunlight and air may conduce to the production of the greatest amount of rough timber and fuel; but the largest yield of lengthy, clean, straight-grown, sound, and valuable timber is obtained by timely and continued attention on the part of the forester. Great care is necessary in the thinning and pruning of bells or narrow strips of plantation. If allowed to remain too thick the slender, drawn-up stems fail to produce the screen or shelter which was the object of the planter. Here an admixture of underwood will prove serviceable, and sometimes it may be found necessary even to pollard a few trees upon the margins in order to obtain the required density.

Continue to collect cones of the Larch, Scotch Pine, and Spruce Fir; those of the Larch in particular require to be well dried before being laid up in heaps. Towards the end of the month plant the remaining Acorns and Chestnuts, and in dry weather undercut the tap roots of two years' seedling Walnut, Oak, Chestnut, and Beech which are not to be transplanted; after cutting tread the soil well in around the plants. The seeds of Yew, Holly, Hawthorn, and Mountain Ash may also be taken from the pits and sown in open ground if the weather will admit. Wherever it may still be thought desirable to plant out single trees, either in the park or in the hedgerows, select strong and well-furnished plants which have become fitted for these positions by standing in fairly open nursery beds.

Hawthorns may be planted out for hedges, and old hedges cut off and plashed. Collect leaves from ditches, scorings of watercourses, and refuse soil of all kinds for making composts. Where trees have been cut off by the saw the work of grubbing and cording up the wood may now go on; though to-morrow is now coming into use for such operations, the work of the mattock and the beetle and wedges is not yet at an end. The cutting up or cleaving of a tree butt may, to the uninitiated, appear a simple operation, but we often see an athletic man wasting his strength while a less powerful but more expert man does the work with ease; the line of natural cleavage is from the heart or pith of the tree to the centre of each large root or spur, and, by inserting the wedges along this line, the stoutest butt is soon split up into segments, and these, in their turn, may be further reduced by taking off slivers in the direction of the annual rings.—A. J. BURROWS.

Fruit Trees in Kitchen Gardens.—It is well known that the art of maintaining a plentiful and regular supply of vegetables is one of the most important parts of practical horticulture. In the generality of private establishments, slight deficiencies in the fruit or flower department may be passed over, but the supply of vegetables must be kept up. Even in good soils, and with plenty of space at command, vegetable culture is by no means easy work, a great deal of judgment being frequently required to contend successfully with the variable and trying seasons so often experienced. Such being the case, and the importance of this branch of gardening being fully recognised, it is a matter of surprise that the owners of gardens should so often fail to afford sufficient facilities for carrying out the work with satisfaction to themselves, and credit to the person in charge. One of the most common complaints that one hears is, that the space devoted to vegetables is too limited, and a considerable amount of ingenuity has to be exercised to supply the wants of the household. Not only is this the case, but the kitchen garden is often so crowded with fruit trees, that a great portion of it is rendered almost useless for vegetable culture. Whilst the trees are young they are not much in the way, but year by year they encroach upon and shade the ground, and it is found almost impossible to keep up either the quantity or quality of the vegetable crops. When there is plenty of land, I not only plant fruit trees in a walled-in garden a mistake; it not only cripples the vegetable supply, but the fruit crop is apt to be deficient. Many instances have come under my notice, where the standard Apple and other fruit trees were crowded into the vegetable ground, when there was an abundance of good soil in the immediate vicinity occupied by ordinary farm crops or coppice wood, where fruit would have flourished better in every way.—J. CORNHILL, *Buckeb.*

Crocus speciosus.—This has continued to flower freely at Tooting all through the severe weather, and a good display of it will shortly be found where the soil is light and well drained.—S.

NEW OR RARE PLANTS.

A MINIATURE TREE FERN.

(ATHYRIUM SCANDINICUM).

THIS beautiful little Tree Fern is a native of the Sandwich Islands, and was introduced from California into this country by Mr. Williams, junior, and it has been exhibited by Mr. B. S. Williams under the provisional name of *Alsophila plumosa*. By some botanists it is associated with *A. aspidioides*, a variable species having a wide range in Tropical America, South Africa, and India. Perhaps this is a correct view, for the different specimens we have seen of *A. scandinicum*, from the Sandwich Islands, differ more from each other than they do from some of the specimens of *A. aspidioides* from other regions. Be that as it may, there are several varieties sufficiently distinct from each other to deserve cultivation. Like the Lady Fern, to which the present species is closely allied, *A. scandinicum* varies very much in the degree of fineness of the cutting of the frond, and in the relative development of the stem. The variety before us is a Lady Fern, with finely-cut fronds and a short, stout trunk; indeed, we might justly call it the Tree Lady Fern. Its small size, as a Tree Fern, combined with the grace and elegance of its foliage, renders this one of the most attractive of recent acquisitions in a family so rich in beautiful forms, and in which there is so much variety.

W. B. HEMSLEY.

BAPTISIA (False Indigo).—Tall and stout herbaceous perennials, with ornamental leaves and fine long spikes of handsome, blue, Lupin-like flowers. Being among the most hardy and vigorous perennials, they will thrive in almost any position in woods and copses, and well-grown tufts of them would look to great advantage near wood walks. They grow well in almost any soil. The species are North American—the best cultivated kinds being *B. australis* and *B. tinctoria*, which inhabit dry and alluvial soils (as distinguished from boggy places) in the United States. In England they thrive on moist or clayey soils as well as on those of a more open nature.—V.

THE KITCHEN GARDEN.

FORCING SEAKALE AND RHUBARB.

By the present system of forcing these two esculents, all uncertainty as regards production is done away with; and now we almost know to a day when we can cut, whatever the state of the weather may be. So accommodating, indeed, are Seakale and Rhubarb as to admit of being dug up bodily and forced in any hole or corner where there is waste heat; but the best place of all is a Mushroom house, and any one who has a structure of this kind may have them in prime order and with great regularity the whole winter through. In the genial, sweet

atmosphere that there prevails, they always come free from taint, and are invariably tender, rich, and succulent. The only time when there is any deviation from this is when more is put in at one time than there is use for, and it, in consequence, remains long uncut, when it becomes stringy and tough, which no amount of boiling or good management in the kitchen will rectify. This, of course, only applies to Seakale, as age and length of stalk little affects Rhubarb, except in a favourable way, by rendering it more solid and less watery, and, therefore, of superior quality altogether than could otherwise be expected. In places where there is not the convenience of a Mushroom house, and there is any back wall warmed by a



A Miniature Tree Fern.

boiler chimney or flue, a good way is to enclose a space with bricks, and line them up round with soil, so as to form a sort of pit, over which a shutter can be fitted, and then cover the roots over with straw to exclude light and prevent the heat from escaping. Thus circumstanced, both these esculents grow beautifully, and require no attention beyond an occasional watering to keep the earth about the roots moist, as any vapour that escapes surcharges the internal air and maintains it in a healthy condition. If the pit is large enough to admit of a few fresh roots being put in every fortnight or so till others can be got out and replaced, a constant succession may be kept up till they can be had from the open ground.

Another capital plan of forcing Seakale is to get a very large flower-pot, and pack into it as many roots as it will hold,

with a fair quantity of light rich soil between them, and then plunge it in a bed of leaves, or other gently-fermenting material, with another pot of the same dimensions turned over it, when, if this is again covered with litter, some splendid heads may soon be had. In digging the roots of Seakale up, those with the largest and best-developed crowns should be chosen, and the same with Rhubarb, for, unless the plants have been well grown, what they yield must of necessity be meagre and poor, as all depends on their strength at the time of starting, and the amount of organisable matter they have stored up in their stems. One great advantage in forcing these vegetables in this way is that, unlike Asparagus, the plants of which are spoiled for ever after, and have to be discarded, Seakale and Rhubarb are none the worse after a season's rest and fresh growth, as they may then be taken up and used for the same purpose again. Instead, however, of planting the old, thick portions of the stems of the Kale, I prefer the large and tough roots, numerous pieces of which break off at the time of digging them up, or may be saved after the forcing is over. These cut into lengths of 4 in. or 5 in., or so form excellent sets and start away vigorously in spring as soon as warm weather sets in. When preparing these for planting, I always make a practice of cutting the lower end sloping and the top flat, otherwise, so near are they alike as regards size that it is impossible to distinguish between the two, and they would most likely, therefore, be planted the wrong way upwards. These sets or cuttings may be made and dibbled out in rows at any time, but it is quite as well to bury the whole in moist sand or ashes as they come to hand till the whole is ready, and then put them out. This should be done in ground that has been trenched and thoroughly enriched with well-rotted manure, as Seakale is naturally a gross-feeding plant, and likes to penetrate deeply in search of moisture.

Salt, added to the manure or sown over the ground in May or June, is a capital help, as it not only acts as a suitable stimulant, but destroys seed weeds, and thus saves time and labour in hoeing. The proper distance for the rows is about 15 in. apart, and 1 ft. from plant to plant, which affords sufficient room for a full spread of the leaves and admits of their full development; which would not be the case were they nearer together. For permanent beds, where the heads are covered with pots or are blanched in any other way, the rows should be at least 2 ft. apart, and the plants placed triangularly about 9 in. from each other down the rows, so that each clump of three has a space of 18 in. between. I find a very good way of getting fine late Seakale is to cover the whole bed during winter, with long stable litter, under which the heads come on slowly and beautifully white, as well as being very tender and succulent. Besides being propagated and increased by means of cuttings of roots made in the above-named manner, Seakale grows readily from seed; but plants so raised, unless under exceptionally favourable circumstances, take two years before they are large enough for forcing, whereas the others are quite strong enough in half that time. To get large crowns of Rhubarb, it is a good plan to dig large holes and work a quantity of manure in the bottom before planting, adding more when filling in the soil around the sides, and if, in addition to this, sewage be given occasionally during the summer, growth will be most rapid and vigorous. What is required for forcing should not have any pulled from it, unless it be a few sticks early in the season, as the loss of every leaf decreases the plant's strength and capabilities for the following season. S. D.

February, and the result was no difference between the two sowings. A neighbour, who sowed in December and again in February, had only an advance of a day in favour of his plan. Last season I sowed here (North Hampshire) Dickson's First and Best and Laxton's Alpha in the open border, and also some in strips of turf for planting out on January 18 and again early in February in the open border. Those sown on turf were put into a Vinery and then hardened off in a cold pit, and from these I gathered May 28. Those sown in January and February in open borders yielded usable pods on June 3, there being no difference between the two sowings. When in Dorset and Norfolk my experience was much the same. The earliest time I ever remember to have seen Peas gathered from that were sown in the open ground was on May 17 or 18, and this was at Haywood House, Westbury, Wiltshire, some few years ago; however, this is undoubtedly not so early as they are in warmer localities. My experience is unfavourable to Kentish Invicta; I have grown it two or three times, but I did not find it a sort to which I could trust. It rotted in the ground when sown before the middle of February, and it is not so good a cropper as many other sorts. No Pea have I ever had as an early one to beat Dickson's First and Best.—J. C. F.

SITES FOR KITCHEN AND FRUIT GARDENS.

As a well-designed work is always better and more satisfactory than fragmentary work can ever be, so, in selecting the site for a gentleman's residence, not only the mansion itself, but also the whole of the appurtenances belonging thereto, should be taken into consideration, and duly marked out on the plan, with special reference not only to the relations they bear to each other, but also that each may occupy the most favourable position for securing the objects for which it was intended. Now, the kitchen and fruit gardens certainly form no inconsiderable part of what may be termed the necessary adjuncts of a first-class establishment; and there are several matters in connection therewith that come more especially within the province of the practical gardener, and which I know to be often overlooked by the architect or landscape gardener. These are mainly shelter, soil, aspect, and elevation. It is no uncommon occurrence to find extensively-constructed gardens dropped into some hollow, as if the main object had been to get them out of sight; or, it may be, the extra depth of alluvial soil in the bottom of the valley had proved an irresistible temptation. No doubt depth of soil is an important matter, and forms one of the constant aims of the practical cultivator; but the bottom lands in the valleys are well known to be several degrees colder than the sloping hillsides. The cold fogs are carried down by their own weight and the moving force of currents of air till they reach the lowest points, where they chill and freeze everything at all tender. This is more especially noticeable in spring and autumn, as every competent observer may easily ascertain for himself. In such positions it is next to impossible to obtain good crops of fruit or early vegetables, for the hoar frost destroys the tender blossoms of the one, and checks and blackens all tender growths of the others. The difference of a few feet in the elevation of a garden or orchard has a wonderful influence in this respect. The crops of fruit and early vegetables in one garden may be ruined by spring frost, whilst another in the same neighbourhood, but situated at a slightly higher level, may escape altogether; and this fact alone will account for much of the variation that is constantly occurring in English fruit gardens. In low-lying gardens, too, there is often a difficulty in securing an outfall for the drainage; and even if the land be naturally dry, there are stake-holes, fruit borders, walks, and other points that must be laid dry, and for which a good drainage outfall is necessary, or they will be an endless source of trouble. The best site for kitchen and fruit gardens is on the site of a gentle slope, where the inclination does not exceed 1 in 20, and preferably less. A southern aspect is best, but a point or two either east or west will not matter. It may be an advantage to have the shelter of hills to east and west as well as north, but such favourable positions are not often met with, and it is of but little importance, as, unless the culinary gardens are placed at a considerable distance from the mansion, it will be necessary to plant screens and shelters of trees and shrubs to blind them. Though a well-managed kitchen garden is at all times an interesting study, yet there are objections to its being placed in too conspicuous a situation, at least so far as regards its worst features; such, for instance, as the backs of sheds or offices being visible from any window or any part of the grounds. But this is a detail than can be easily arranged without creating an eyesore. The shelter belts or screens should not be placed too near, if anything beside shrubs are used, as, in the winter especially, they may give too much shade and prevent the land drying properly.

The most important matters next to aspect are elevation and soil, as shelter can easily be secured by raising plantations, and these are

Winter-sown Peas.—My experience of Pea sowing does not agree with that of Mr. Legge (p. 530), although I must say, at the outset, that seasons, and soils, and situations have a great deal to do with late-sown Peas; but I believe that in nine cases out of ten (and the same as regards seasons) Peas sown some time in January, all points considered, are to be preferred to those sown in the autumn. When I was in Backinghamshire we used to sow in the end of October or beginning of November, on a south border, and again in January, but when the picking time arrived only two or three days were gained by autumn sowing, and the crop was not so heavy as that on the January sowing. Some of the rows were very much injured by slugs and other causes to which autumn-sown Peas are so liable. In 1874 I was in Dorsetshire, on the seacoast, twenty miles from Weymouth. There I sowed January 15 and again early in

generally necessary for other reasons. In large establishments the kitchen gardens are often placed a considerable distance from the mansion and private grounds, but this adds a good deal to the expense of keeping. There is a great loss of time in moving plants, manures, &c., from one department to the other, and I cannot see, if the departments are so separated, that there is any corresponding advantage; there should be no difficulty in hiding any feature that may be objectionable, and the kitchen gardens may be—indeed, ought to be—a pleasant sheltered promenade at all seasons of the year. To a mind capable of being roused to a study of such matters, there are many interesting features in the cropping and management of a kitchen garden; and as regards fruit growing, either under glass or in the open air, there is always something to attract attention. In the winter there is the pruning and training to be seen to; and when the trees are bare, the different styles of growth of the various kinds of fruit trees are brought out more prominently, revealing the fact that, like human beings, it is difficult to find two in all respects alike. And as the days lengthen, and the buds begin to swell and unfold in succession, how absorbing the interest becomes; and it continues to increase, and only culminates when the treasures are gathered in and stored away, in autumn. I am sorry for those people who are anxious to hide up and place out of sight altogether the culinary department, because they lose a most interesting subject for study. There has been a tendency during the last quarter of a century to place fruit and vegetable growing in the background. I think scarcely anyone who knows what gardening was at the period to which I have referred, and has watched its growth since, will deny that such growth has been mainly in ornamental gardening and in the glass erections which the style adopted has rendered necessary. There is scarcely one place in ten at the present time where the kitchen gardens are not starved, both in labour and manure, in order to keep up the expensive show in the ornamental department. This would not continue if employers took a greater interest in fruit and vegetable growing; and no doubt by-and-by things will right themselves again.

Assuming that the residence with its buildings occupies the crest of an eminence, the kitchen and fruit gardens might be appropriately placed on one of the flanks, sheltered and surrounded where necessary by belts and groups of trees and shrubs, and among whose sheltering folds might be found excellent positions for groups and plantations of choice fruit trees. Arranged in this way, the whole south front would be open to be treated in any manner most in accordance with the character of the building, or most agreeable to the wishes of the owner. The size of the kitchen garden must depend in some measure upon the demand that is likely to be made upon it; but very large gardens in these days of dear labour are, I think, a mistake, at least so far as regards the walled inclosures. No doubt an extensive system of walled inclosures gives a large extent of surface for training wall trees, as well as a variety of climates in their different aspects, that are not without their uses. But I think the time will come when fruit-growing, as regards the choicer kinds at least, will be carried on more under glass, and then fewer walls will be required; and, as all the coarser kinds of vegetables can be better and more cheaply grown outside the garden walls, the walled-in space may be much curtailed, and reserved for early vegetables, salads, and such like. The sides of the paths may be utilised, as at present, for Pears and Apples or other fruits on espaliers; but fruits and vegetables do not agree well together on the same plot.

I have seen in Worcestershire and elsewhere good crops of Apples grown in the Cornfields, where the plough is used almost close to the trunks of the trees; but the rows of Apple trees are at wide intervals apart, and the plough does not stir up the soil so deeply as the spade. Surface culture under large spreading trees, I believe, is beneficial; but then such trees have obtained a firm grasp of the soil, and what is more, the soil for several feet in depth is not inimical to their well-doing. But on land under spade culture, if fruits and vegetables are mixed, it is generally at the expense of both. The plan that appears to me to offer the best chance of coping successfully with the altered state of things which we must expect in the future, is to build a few roomy span-roofed houses, to make sure of a crop of the choicer kinds of fruits; to have a much smaller walled-in space, and to devote that mainly to trained fruit trees, early vegetables, and salads; whilst the bulk of all vegetables crops should be grown entirely outside the garden walls. It is not easy to form an estimate as to the space required to grow fruit and vegetables for a given number of persons, as the requirements of different establishments vary considerably; but to supply well, all the year round, an establishment of (including servants) twenty-four to thirty persons, allowing at the same time for visitors and the customary parties being given, will require about five acres of good land. Supposing the family have two country residences (which is a common occurrence), then about three acres at each would suffice. The best form for the walled garden is for the north of the kingdom an oblong parallelogram, with the

longest faces pointing to the south and north, for the purpose of securing a greater extent of south wall. In the south a square garden will be more suitable, as good fruit can be grown on eastern or western aspects, and an unusual length of south wall is less sought for or required. One of the most important matters in connection with vegetable and fruit growing, if all things are to be well done, is a good supply of pond or soft water. For some reason hard to discover, this want has not had so much attention given to it as its importance deserves; and when the site for the gardens is chosen it should be borne in mind, as any arrangements it may be necessary to make, to secure a good supply of this indispensable fluid, will be more economically carried out then than afterwards.—“Field.”

AFTER THE FROST.

Those who, like myself, are growers of hardy plants, both in pots and in the open ground, will have cause to look after their plants now that thaw has followed severe frost. In my cold house, and also in my outdoor frame, the possibility of frost coming at Christmas or thereabouts had been considered. All hardy Primulas in pots, Auriculas, Polyanthus, Primroses, and the representatives of various species, also Christmas Roses, Pinks, &c., had been allowed to become pretty dry, and when the frost came there was but little moisture in the soil for it to fasten upon. The great danger of frost laying hold of the soil in pots, consists in this, that when it is pretty moist, the expansion caused by frost will crack the pots, hence the importance of the soil being as dry as possible when it threatens. My cold house has a north aspect, and there was an additional reason for avoiding a superabundance of moisture. The first night of the sharp frost everything was frozen, and newspapers were carefully laid over the plants two or three thick, but the plants, the papers, the glass, and rafters, were all encased with hoar frost. The papers were left on the pots till the thaw had passed through the house, to keep the drip from the melting hoar frost from falling on the plants. Quite small plants of some delicate-growing Auriculas are unharmed. The only sufferers have been the greedily here and there; all the life has gone out of them. I have gone over the plants, picking off the decayed foliage, pressing down the soil about the roots, and giving a little water where necessary, but taking care to thoroughly soak the soil of plants that are quite dry. It is surprising how fresh and well they look after being gone over and touched up in this way. The fear is that if this mild, close, moist weather continues, some of the Primulaceae, and especially the Auriculas, will become preternaturally active. The time for moving will soon be here, but I shall be in no haste to witness it. It is an old saying that “the ice that will bear a goose before Christmas will not bear a duck afterwards;” but there may be an abundance of skating yet, and premature activity in plants brings no gladness to the heart of the florist.

On a raised ash bed in front of my cold house are Polyanthus, Aquilegias, Anemones, and many species of Primulas, &c., in pots, and it was a matter of considerable anxiety that the frost would do harm here. As soon as there were indications of its being severe, light strips of wood reaching higher than the points of the foliage, were laid on the rims of the pots and over these a covering of old newspapers, and upon these garden mats and old pieces of sacking. Then came the snow and added to the covering, and though the frost penetrated through to the soil of the plants, it was felt the covering had averted its effects. This covering was kept on for more than a week, and when the time came to uncover, not a single pot was broken. It was necessary in many cases to litter the soil about the plants, and the soft rain which fell subsequently, has decidedly refreshed them. Not a single loss has occurred so far as can be ascertained at present. Beds of Auriculas, Polyanthus, and other plants in the open ground, not having the advantage of covering have had the soil much loosened, but a gentle pressure soon restores the plants to their proper positions. About the middle of December the beds were well top-dressed with a mixture of leaves and ashes from a burnt heap of refuse. The leaves lying roughly on the surface formed guards from the cold, and the plants appeared to nestle among them as if feeling quite secure. There is nothing like a good top-dressing of this kind in autumn. It is an excellent protection during winter, and in spring it mingles with the surface soil and affords nutriment for the plants. I never waste any house refuse of a vegetable character, and indeed everything that will rot or burn is utilised for the garden. It is laid by in a heap, and when required charred till it is fit to be used as a top dressing. Times of severe frost are not without their uses to gardeners, though they have their attendant discomforts. A small heap of manure infested with worms and other insects was turned over two or three times during its continuance, and the birds and frost combined, have cleared it of insect life.

GARDEN DESTROYERS.

THE COMMON DARK MOTH OR TURNIP MOTH.

(AGROTIS SEGETUM.)

This moth is very common, and is very generally distributed throughout the United Kingdom, and, in fact, over a large portion of the world, as it may be found in almost every part of the Continent, and is very abundant at the Cape of Good Hope. The caterpillars of this insect, as well as those of several nearly allied species, are generally known by gardeners and farmers by the name of "the grub." This species is particularly troublesome both in the kitchen and flower gardens, as well as to certain farm crops, by feeding on the roots and leaves of various plants. Among its favourites are *Auriculas*, *China Asters*, *Dahlias*, *Balsams*, &c., and in the kitchen garden *Cauliflowers* and *Cabbages* of all kinds, *Lettuces*, *Spinach*, *Beetroot*, *Radishes*, *Turnips*, &c. On farm land at times it does an immense amount of mischief to crops of grain of all kinds, *Mangold Wurzel*, *Swedes*, and *Turnips*. These caterpillars generally begin by attacking a plant at the crown or a little below it, and do most damage among young plants, whose roots they eat right through. In some seasons they appear to continue at their work of destruction all the year round, in the winter feeding on the lower parts of the roots. There does not appear to be any way of destroying the eggs, which are laid by the moth in the earth near the roots of plants; but many are, no doubt, destroyed by various birds and beetles. As the caterpillars only feed at night, remaining under shelter during the day, it is not very easy to destroy them. Salt and water, in the proportion of 1 oz. of salt to a gallon of water, has been found very efficacious, when

*Agrotis (Noctua) segetum.*

the plants have been well watered with this mixture, in preventing the caterpillars from attacking them. Soot laid thickly on the ground, dug in or placed round the roots, and then covered with earth, has been found to be very useful in keeping them away. One pound of soap mixed with sixteen gallons of water, applied warm to the roots until the neighbouring holes and cracks in the ground are full, will cause the caterpillars to come quickly to the surface, when they can easily be collected. Tobacco water would kill them if it could be applied so as to reach them. If in great numbers, search should be made under clods and stones, not only near the plants which are suffering, but round those which are not yet touched, for the caterpillars, and the plants may be searched after dark with a lantern. Their natural enemies are numerous; moles, several kinds of beetles, and various birds help to keep this pest in check. The rooks, perhaps, are their greatest foes, and, though they are often accused of doing much damage in gardens and fields to various crops, it will seldom or never be found that they destroy a plant which has not already been attacked by some insect; on no account should these useful birds be scared from gardens. The moths are very difficult to find during the daytime, on account of their dull colour and their habit of remaining in some sheltered place until dark, when they may be found during the summer months flying about at times in great numbers, the males being generally much more numerous than the females. The chrysalis may often be found when garden ground is being dug, and should always be destroyed. The moths make their appearance in June, and may be found during the summer, and as late as October. The females lay their eggs in July or August, choosing a position in some light earth near the plants which will afford food to the caterpillars, which are hatched in ten or fifteen days, and they remain hidden during the day under clods and stones, or in

holes which they form for themselves, 2 in. or 3 in. deep in the earth; at night they emerge from their shelter, and carry on their work of destruction until dawn, when they again hide themselves. They can move at a surprisingly rapid rate, and as soon as the root of one plant is eaten through they are off to another. Ten or twelve have been found at the root of one Turnip, and in France very great damage has frequently been done to crops of Beetroot. A few of the caterpillars become chrysalides in October, from which the moths appear in a few days; but they mostly burrow 2 in. or 3 in. into the earth at the approach of winter, and live on the lower part of the roots of various plants, or, forming an egg-shaped ball of earth round themselves in which they are sheltered from cold and damp, pass the winter in a torpid condition. Early in spring they reappear, and in May or June again descend into the ground and form a rough cell, in which they change into chrysalides, from which the perfect insects emerge in about a month. The moths measure about 1½ in. to 2 in. across their expanded wings. The males may be distinguished from the females by their lighter colour, the greater distinctness of their markings, and by their antennæ, which are very finely toothed, whilst those

Caterpillars of *Agrotis segetum*.

of the female are smooth. The upper wings of the male vary in colour from pale greyish-brown to yellowish and reddish-brown. Those of the female are dark chocolate or reddish-brown, with the markings very much blended with the general colour. In both sexes there are two double wavy, transverse, blackish lines on the upper wings, between which, near the upper margin, are two spots, the nearest the base being surrounded by a lighter ring, and the other being somewhat ear-shaped and blackish. Near the outer margin is a very irregular dark double line. The lower wings of the male are pearly white; those of the female dirty white, with the margin darker. The thorax is of the same colour as the upper wings; the body is greyish-brown, somewhat lighter towards the base. The caterpillars, when fully grown, are 1½ in. to 2 in. in length, and have eight pairs of legs, the first three joints of the body being each furnished with a pair, as well as the sixth, seventh, eighth, ninth, and last joints. The head and first joint of the body are horny, very smooth and shining, and brownish in colour; the latter being marked with three paler lines. The eleven other joints are smooth, shining, and of a smoky yellow colour, the back being somewhat pinkish or purplish. There are three longitudinal pale stripes, bordered with a dark line on either

side, one down the centre of the back, and one on each side, of the caterpillar. On each joint are ten slightly-raised, darker spots, each bearing a hair; four are placed on the back, two in front (one on either side of the central lines), and two behind in the same position; the others are placed three on each side, just above the feet, in the form of a triangle. The chrysalides are about 1 in. long, and are of a bright brown colour.

S. G. S.

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN WINDOWS.

THERE is no branch of gardening which embraces such a wide range as that relating to the culture and preservation in a healthy state of plants in dwelling houses. There are and always will be so many who have no frame or greenhouse, that the question of how to grow plants successfully in windows is necessarily of the greatest interest to them. Those who have even the convenience of a cold frame will, of course, find the task of decorating the dwelling much facilitated; but, as I have said, there is unhappily a great portion of our population who not only are not provided with this simple accommodation, but whose garden is of the most fragmentary character. This is more especially the case in large towns where windows in many parts form almost the whole available space in which garden operations are conducted. There is, however, no reason for any one to despair of attaining success, for I have noticed that it is more from a want of knowledge than from adverse circumstances that failures occur.

Choice of Subjects for Cultivation.

Formerly the choice of plants suitable for culture in rooms was somewhat restricted, Cactuses and various other kinds of succulents being mainly relied upon for that purpose. Now, thanks to the exertions of plant collectors and to the improvements which have been effected in many of our florists' flowers, we have an abundance of subjects from which to choose. It is almost impossible to give a list of plants suitable for every one, as the conditions of air, light, warmth, and atmospheric humidity vary according to the situation and uses to which the rooms are put. For instance, a plant that would do perfectly well in an apartment that is not constantly occupied, where ventilation is somewhat freely given, and where artificial heat is but seldom applied, will linger and die where a fire is constantly kept and oil or gas is freely burnt. On the other hand, we shall find certain plants that can only be kept in health by placing them where they are screened from draught, and where the air is maintained at a certain temperature. The care which these two classes of plants will require will necessarily be of an entirely different description, and it is just in this respect that the plant grower in windows will have to exercise judgment. As an illustration let us take the *Cyclamen*, a beautiful window plant, but one which will only succeed in a cool room; confinement is certain death to it. An india-rubber plant, on the contrary, will thrive best if kept tolerably close, but it must receive certain attentions which the *Cyclamen* will not need. It will thus be seen how widely varied the treatment of room plants must be, and how necessary it will be to choose suitable subjects for each situation. Then, again, we must take the aspect of each window into consideration. A Moss or a Fern will thrive admirably where a *Fuchsia* or a *Pelargonium* will give but little satisfaction. In most dwellings there are windows having different aspects; all that is necessary, therefore, is to ascertain in which of them the desired plant will best thrive. The various types of vegetation, flowering and fine foliated plants, &c., may be all represented, and the grower will thus be enabled to secure a series of plants, pictures, as it were, each one presenting distinct characteristics of its own. Whilst indicating a few of the plants best adapted for window gardening, I would advise that growers should allow some scope to their individual likings, and make trial of those plants which they may have a fancy for. There is much yet to be accomplished in this branch of gardening, and the pleasure and honour derived will be in proportion to the diffi-

culties surmounted. There are many plants now considered difficult of culture which probably only require to be better understood to render them amenable to room culture. For a confined atmosphere, such as an ordinary sitting-room, we must rely chiefly upon fine foliated plants, those possessing leaves of a somewhat hard, leathery nature being the easiest to preserve in health. *Ficus elastica* and *Chauvieri*, *Aspidistra lurida* and its variegated form, *Dracena terminalis*, *congesta*, and *indivisa*, *Cordylina rubra*, *Chamærops excelsa*, *Livistona borbonica*, *Corypha australis*, *Maiden-hair*, and other Ferns are amongst the best for such situations. For apartments that are but occasionally heated, *Grevillea robusta*, *Acacia lophantha*, *Aspidistras*, *Chamærops excelsa*, *Aralia trifoliata* and *reticulata*, *Cyclamens*, *Solanums*, *Primula sinensis* and *denticulata*, *Violets*, *Mignonette*, *Tropæolum tricolorum*, and bulbs of all kinds may be grown. The plants enumerated are all suitable for winter and early spring. In summer we get a much greater variety. *Pelargoniums*, *Fuchsias*, *Lobelias*, *Petunias*, and all the various kinds of bedding plants will grow and bloom admirably in windows during the summer season. A very effective and gratifying display can be made by sowing different kinds of annuals in boxes made to fit and affixed to the outside of the window. *Nasturtiums*, *Sweet Peas*, *Eschscholtzias*, *Mignonette*, *Phlox Drummondii*, and such free-growing, persistent blooming plants when thus grown make a dwelling very pleasant to the eye. This method of floral decoration is not nearly so much adopted as it should be; the cost of a box or two and the necessary fittings, as well as the small amount of seed required to sow them, is very trifling, the cultural care, too, being of the simplest. Windows facing the north and east are most suitable for boxes, inasmuch as they there get only the morning and afternoon sun, and, being shielded from the fierce noonday heat, the flowers last longer in perfection. For a northern aspect there is no more beautiful plant than the common *Moneywort*; when well grown it forms a drapery of lustrous green and bright yellow, such as is scarcely equalled by any other plant. In windows facing the north nothing will give more satisfaction than Ferns and Mosses, which, at all times lovely, acquire additional luxuriance and beauty in just those very places where most other plants refuse to flourish. Any of the following may be selected, they being all of fairly easy culture: *Asplenium bulbiferum*, *Adiantum Capillus Veneris*, and *conestum*, *Pteris cretica* and *scaberula*, *Oncidium japonicum*, *Davallia Nova Zealandia*, *Niphotolus Lingua*, and *Selaginella denticulata*. Succulent plants should not be omitted, as they afford variety, give but little trouble, and are really interesting; they must, however, be grown where they get the full heat of the sun. Many of the old-fashioned Aloes, such as the *Candle plant* and the *partridge-breasted Aloe* are now but seldom seen. They are, however, very distinct in manner of growth, and deserve a little more attention than they now get. *Vallota purpurea* is a handsome, evergreen, bulbous-flowering plant which anyone may grow. *Campanula Barbellieri* is a pretty little trailing plant suitable for a small basket. I once saw a beautifully flowered specimen of it hanging on the outside of a window in a crowded part of London. *Saxifraga sarmentosa* and *Cactus flabelliformis* may be both employed in the same way; the one in a shady situation, the other in the full sun. The plants above enumerated may all be cultivated and kept in health in the dwelling-house. There are, of course, a great number which may be introduced for a time into apartments, but which cannot be retained therein without injury, but of these it is not my intention to treat. The owner of a glass house will, of course, not need to grow these plants in the windows of his residence.

General Treatment.

It will naturally be understood that cleanliness is of the first importance to plant life. Leaves breathe, as it were, through their pores, and if these be choked by impurities of any kind, the functions of the plant are in a manner paralysed. The more confined the atmosphere the greater need is there for frequently washing and syringing. All plain, hard-foliated kinds should be well sponged, using plenty of clean tepid water. Ferns, Mosses, &c., may be gently but thoroughly syringed, taking care that the under surface of the foliage is well cleaned. Insects often make their appearance, and must be kept under either by

brushing them off with a soft brush or by means of fumigation. The latter is the most effective method, although if the stitch-in-time principle be acted upon and the first insects destroyed, there will seldom be any need for it; should a plant, however, become badly infested, place it under a tub and fill the same with Tobacco smoke. Two applications at the interval of a few days will generally suffice to clear them all off. When we come to watering we touch the most difficult part of our subject. It is utterly impossible to lay down hard and fast rules; the attempt to do so would merely result in disastrous failure; nothing but practice can give proficiency in this branch of plant culture. The great point to be kept in view is, that in winter water is merely required to maintain life, whereas in summer when the functions are active and growth progressing, enough must be given not only to supply waste, but to allow of the extension and formation of new tissues. Were these facts kept constantly in mind, there would not be many disasters arise from over-watering. In dull, sunless weather let each plant dry out thoroughly, and then give just enough to well moisten the ball of earth. In a hot parching time this care is not so needful; if the roots are healthy, and the plant growing freely, copious and frequent waterings must be the rule. These general rules will form a basis upon which the grower may safely work. They will, however, have to be varied and modified according to circumstances and the plants cultivated, but for the acquirement of this knowledge he must rely upon constant practice and unremitting attention. In the matter of ventilation be careful to avoid cutting draughts; much harm is often done by injudicious air giving. Do not either run into the common error of turning your plants out upon the doormats or balconies in weather which, although sunny, may yet be of a chilling nature. Harden gradually on the approach of spring by increasing the amount of air, and only turn them out-of-doors on mild, moist days. A safe rule is to be guided by one's own feelings; if the atmosphere be congenial to the human frame it will be beneficial to plant life, and *vice versa*. That, at least, is the conclusion at which I have arrived.

Potting and Propagating.

Many who grow window plants make a point of getting them shifted by a professional cultivator. This is, however, by no means necessary, and is wrong in principle, as the nature of a plant is but imperfectly understood if its root action cannot be observed. I would advise that the soil be purchased at a nurseryman's, stating for what kind of plant it is required. Be careful never to give large shifts, and see that your soil is well sanded and not too rich; any little deficiency in nutriment can easily be supplied by a top-dressing of any of the concentrated manures. For Ferns and delicate-rooted subjects allow plenty of drainage; in fact, all kinds of plants grown in rooms should be amply provided for in this respect. Nothing can be more injurious than a stoppage of the drainage, and to secure immunity from injury in this respect, each plant should be examined at the commencement of the winter, and fresh drainage given, if found necessary, using some good clean potsherds or broken charcoal for that purpose. There is no reason why window gardeners should not try their hands at propagating; it is amusing, and greater pleasure is derived from the culture of home-struck plants than from those which have to be bought. Most of the so-called soft-wooded plants may be increased with ease, and if a few cuttings be put in every year, they will supply the place of plants which get too large. The appliances necessary will consist merely of a few bell-glasses, some soil of a light description, and some silver sand. Fill the pots to within 2 in. of the rim with soil, and finish off with sand, making the pot quite full. The pot should be filled about one-third of its depth with drainage. The cuttings are inserted in the sand and kept covered with the bell-glass until rooted. Fuchsias, Heliotropes, Verbenas, Lobelias, &c., may all be struck in this manner in an ordinary living room. Pelargoniums only will need no covering. Put each cutting in a small pot; it will root freely enough. Seeds of annuals may also be raised by sowing in a pot filled to within 1 in. of the rim, and covered with a piece of glass until fairly up. I have here indicated comparatively little of what may be done in the way of window gardening, but

enough, I think, to enable even beginners to try the undertaking with a fair prospect of success. I trust that they may not be daunted by a few failures for, permit me to add, in this, as in every other branch of gardening, there is no royal road to success.

JOHN CORNHILL.

Byfleet.

THE FROST AND THE THAW.

It is, probably, rather early to write positively as yet of the effects of either of these, but, as far as appears, the effects of the frost seem less disastrous than might have been expected from its great length and extreme severity; and if vegetation has escaped with less injury than usual, this has arisen from the mode of thawing rather than from any lack of severity in the freezing. It was a rain thaw, and no doubt that is the very best. The water relaxes, as it were, the hold of the frost in vegetable tissues, and draws the ice out gradually and gently without rupturing them. It is somewhat singular that vegetable tissues, unlike water pipes or other mere mechanical tubes, seem to burst rather in the thawing than in the freezing. It is the suddenness of the former, rather than the severity of the latter, that seems to kill plants; hence, partly at least, the greater destructiveness of spring than of winter frosts. No doubt the sap is also more plentiful and more active in the spring, but it is probably the greater energy of the sun, and consequent rapidity of the thawing of vegetable tissues, that render spring frosts so exceedingly and exceptionally destructive. Be this as it may, it is pleasing to note that the severe frosts seem to have passed away without any very serious injury. Even the Laurustinus, generally the first to be browned or killed here, seems to have escaped, and looks as if the full head of bloom even would still expand. This comparative immunity from injury as regards shrubs and plants could hardly, I should think, arise from the amount of snow that has scarcely sufficed to cover them. Possibly, however, the unusual amount of hoar frost might have helped to keep the plants warm. I never remember seeing so much hoar frost for so long a time as this winter.

D. T. FISH.

Hardwick House, Bury St. Edmunds.

—A correspondent writes:—"The three weeks frost broke up a few hours ago. The thermometer, for something like that period, has indicated many degrees of frost. The ice in our ponds and canals was 10 in. thick, and our pumps and water-works pipes were frozen. To-day (Dec. 28) I have walked round my garden, very carefully, for there is still ice like glass two or three inches thick on the paths. I expected to lament many favourites destroyed, but I find my new Strawberry beds green as emerald; Couve Tronchuda and Spinach with not a soddened leaf; All the Year Round Lettuce, sown in September, perfectly sound; leaves green, and not yet fallen from several pyramidal Apple and Pear trees; bush Roses still full of leaf, and many half-grown buds not drooping; many standard Roses full of leaf where I expected to find the heads destroyed; and, on the house wall, facing the east, Belle Lyonnaise, Climbing Devoniensis, and Maréchal Niel, still covered with unfrozen foliage. Some scores of Rose cuttings, planted like Gooseberry slips, in the open ground, last September, seem perfectly uninjured—a curious circumstance, as I have for years tried to raise Roses on their own roots, under glass and otherwise, and never could succeed. My garden is fully exposed on all sides. I reside on the east coast of Lincolnshire, on a tidal river, five miles from the sea. The only explanation, to my mind, is that we have had no east wind. The wind, north-west, has been very often a dead calm, and the ground, for the last week, has been more than 1 ft. deep in snow, but there were many days and nights of severe black frost before the snow came."

Boston.

W. C.

Paraffin as an Insecticide.—This is one of those remedies that appear to me to vary in their effects according to the manner in which they are applied. We have lately been using Paraffin freely for washing plants, and also houses that have been badly infested with mealy bug, mixing it in the following manner, viz., a wineglassful to three gallons of water, with a good handful of soft soap, mixing altogether until worked into a froth. Then we have a copper of soft water, boiling hot, and mix the quantity required, which then mixes without difficulty. If for washing glass houses, apply it with a garden engine with force, and extra strong if no tender foliage be in the way. If for plants, do not exceed the strength named, and apply the mixture carefully with a syringe. I feel sure, if every part be reached, that a clearance of insect pests will be the result. If mixed with cold water, and the plants be dipped in it, as some state, there is no wonder if the cure prove worse than the disease.—J. G. L.

NOTES OF THE WEEK

The Cape Pond Weed.—Notwithstanding the severity of the weather of late, numbers of flowers of the *Aponogon distachyon* may still be seen in a stream of water in Mr. Parker's nursery, Tooting. Although the water was frozen over to a considerable depth, neither the plants (which are in pots) nor their flowering properties appear to have sustained the slightest injury, and should the weather continue as mild as it is at present, hundreds of blooms will soon be opened.

Hardiness of Iris alata.—This charming winter-flowering Iris (lately figured in THE GARDEN) commenced to expand its blossoms in Mr. Barr's grounds before the late severe frost set in. Blooms of it, which were then half opened, have withstood the severity of the weather without injury, and are now expanding rapidly, and will soon be fully developed. This proves that, in addition to this being one of the handsomest of the winter Irises, it is also one of the hardiest, and, on this account, it is needless to say, the most valuable.

Angræcum sesquipedale.—Plants of this charming Orchid are well grown in Messrs. Veitch's nursery, Chelsea. A specimen of it at the present time bears about twenty buds and partly-expanded blossoms, whilst the plants themselves, owing to their green and healthy appearance, are far from being unattractive, even when not in bloom.

Daphne indica rubra.—This has become comparatively a scarce plant, even in nurseries; it is, therefore, satisfactory to find a good stock of it in Messrs. Veitch's nursery, consisting of compact little plants, in 4-in. or 5-in. pots, each shoot of which is furnished with a good truss of well-coloured, agreeably-scented blossoms. So fragrant, indeed, are they, that a few small plants of this *Daphne*, even in a large conservatory, are sufficient to fill the house with a perfume, the sweetness of which is equalled by that of but few other plants.

A New Fern.—Mr. Williams has, in his nursery at Holloway, a very distinct *Oreolepis*, which promises to be of great value for hanging-baskets in the conservatory. It has long, arched leaves, and produces large masses of thread-like rhizomatous roots, from 8 ft. to 9 ft. long, which depend in a graceful manner from the baskets.

Acubas at Christmas.—When well furnished with berries, and the latter well coloured, few berry-bearing plants are more handsome in winter than *Acubas*. They are quite as easily grown as *Solanums*, and, on account of their stiff green foliage, are much more effective, especially when grown in the form of dwarf, bushy plants in 6-in. pots, as may now be seen in Messrs. Veitch's nursery, Chelsea.

The Giant Christmas Rose.—The blooms on established plants of this fine *Hellebore* in Mr. Parker's nursery, Tooting, are this year finer than we have ever before seen them. They have been slightly protected from rain and snow by means of lights or hand-glasses, which keep the blooms clean and pure, and also encourage them to develop themselves more perfectly than they otherwise would do.

Hardy Plants in Flower in Nottinghamshire.—There are certainly not many gardens in the midland counties where one may gather flowers on New Year's Day from the borders, and that too, when the thermometer marked 25° of frost on Christmas Day. Here there is a large clump of the giant Christmas Rose with two and three blossoms on a stem, that has been in bloom for a month past. There are also several other charming bluish-coloured *Hellebores* in bloom, a few beautiful blossoms of *Hepaticas*, white, blue, and H. anglica, several beautiful *Primroses*, hybrids from the large mauve *Primrose* now known as *P. grandiflora*, and of the rich crimson *P. antiochensis*. *Polyanthuses* were blooming well before the frost, and will soon be sending up their heads. I know where I could find the first purple bud of the early spring *Cyclamens*, whose great rich crimson-lined leaves lay hid unhurt beneath the snow.—FRANK MILLS Bingham, Notts.

Trial of Hellebores.—Mr. Barr has now in his nursery at Tooting perhaps the largest and most complete collection of *Hellebores* ever got together. It comprises every variety procurable both in the United Kingdom and on the Continent, and each kind being well planted on raised and otherwise prepared beds, their correct names and synonyms will be easily determined. At present there is in bloom a large quantity of *Helleborus altifolius* or *maximus*, and a beautiful variety named *H. niger minor*. The latter possesses foliage of a lighter and more pleasing shade of green than that of any of the other kinds, and its flowers, which have been produced in abundance since early in November, are large and of snowy whiteness, and are admirably adapted for bouquet making. Though the plants in ques-

tion have had no protection afforded them, only such flowers as were fully expanded when the frost occurred have suffered any injury. As the different sorts come into bloom, they will be classified; and if this be done (as no doubt it will be) as efficiently as the *Daffodils* were in the same establishment, good work will be effected.

Eupatorium Weinmanni.—This is largely grown in Mr. Wills' nurseries, Fulham, for supplying cut blooms in winter, which it does in abundance. Its leaves are smoother than those of *E. ageratoides*, and its flowers are whiter. It is also well worth growing into specimens for flowering in the conservatory.

Masdevallia polysticta.—Though the flowers of this *Masdevallia* are comparatively insignificant, they are, nevertheless, very pretty, and are produced in greater profusion than those of any other kind. It is grown in quantity in the Holloway nurseries, where small plants of it, in 4-in. pots, bear, at the present time, as many as a dozen graceful little flower spikes, each of which is furnished with some five or six buds, or small, whitish, prettily-spotted blossoms that well repay minute examination.

Dwarf Poinsettias.—These are well grown by Mr. James, Isleworth, who propagates them from tops of plants late in the summer, and by good management afterwards succeeds in getting plants about 6 in. high in 5-in. pots, bearing fairly large heads of bloom and furnished with healthy leaves down to the pot. In this state they are exceedingly useful for small vases or for forming a front row in the conservatory. In the same garden large plants of *Poinsettias* are also grown to perfection, and, mixed with good plants of the double white *Azalea narcissiflora* and graceful racemes of *Euphorbia jacquiniæiflora*, they produce at the present time a grand effect.

Pilea muscosa among Orchids.—This free-growing plant is grown on the stages among the Orchid pots in Mr. Philbrick's garden at Regent's Park. It is planted out in the gravel along with *Panicum variegatum*, and, in this way, the gravel and pots are almost hidden, and more moisture is retained in the atmosphere than would otherwise be the case; therefore, besides the good effect produced, the Orchids, which are, as a matter of course, the first consideration, are benefited thereby.

Cyclamens and Tree Carnations.—These associate well together. They flower at the same time, and the same temperature and other conditions suit each equally well. Mr. James, Isleworth, grows them together in a small lean-to house, and, besides affording plenty of bloom for cutting, they also make a fine display for many weeks in the form of plants in pots. The *Cyclamens* consist at present chiefly of a rich dark purple or magenta-flowered kind and a pure white sweet-scented one, and the Carnations are *Rose Perfection*, rosy-pink; *Miss Jolliffe*, flesh colour; and *La Grande*, scarlet. The large *Cyclamens*, so well known at the London shows, that come from Redlees, are quite equal to those of former years, and the same may be said of the *Cinerarias*, *Pelargoniums*, &c.

Oncidium Forbesi.—Of all Orchids now in flower in Messrs. Veitch's nursery this is one of the most attractive. Plants of it, bearing gracefully arching spikes of golden-edged, chocolate flowers, are introduced among other plants on the sides of pathways with excellent effect. In the same houses are also finely flowered examples of the well-known *Lycaste Skinneri* and its charming white variety, also a remarkably fine variety of the showy *Odontoglossum Halli*, one plant of which bears two graceful spikes, each furnished with about a dozen large and handsome blossoms. To these may be added the pretty white *Lælia albida*, and that most useful of all *Lady's-slippers*, *Cypripedium Sedeni*.

Betonica (Betony).—In woods and thickets all over Europe and Northern Asia these plants are among the most attractive of the extensive Labiate Order. One species, *B. grandiflora*, a handsome plant, is one of the most valuable subjects that could be found for the wild garden, growing anywhere in free soils, in copses or shrubberies, among the dwarf herbaceous plants or Grass.

Bocconia (or Macleaya) Cordata belongs to the Poppy family, but is wholly distinct in aspect from any other herbaceous plant grown, and one of the most valuable for the wild garden, living, as it does, in almost any soil, but attaining the proportions of the stately Siberian herbaceous plants when in free and good soil. In open glades in woods it would be a great ornament, especially if planted near deep accumulations of leaf soil.

ANSWERS TO CORRESPONDENTS.

Questions.

Substitute for Asphalte.—Allow me to state in reply to "H. M." (p. 556, Vol. XIV.) that an excellent dry path for gardens may be made as follows: After removing 3 in. or 4 in. of the surface soil, put in a layer of broken stones or bricks, road metal size, and fill in the interstices with smaller stones and sand mixed with as much coal tar as will moisten it and no more. It should then be well rolled. After the lapse of three or four days it should have a coating one-eighth of an inch thick of sand and coal tar, made as dry as possible, and again rolled, after sprinkling the surface with dry sand to prevent the mixture adhering to the roller. In ten days it will have set sufficiently hard for use.—T. B.

—"H. M." (p. 556) will find the following directions for laying down garden paths with coal tar and gravel, useful:—Procure a quantity of common gravel as free from dust as possible, put it under cover and turn it frequently till quite dry; mix this with tar, just sufficient to wet every pebble, and no more; do a little at once, and turn it over till well mixed. Make the bottom of the walk quite solid, and then lay on the mixture from 2 in. to 3 in. thick. Press down with a heavy roller and sprinkle a little fine gravel on the top, then roll occasionally till set. Fine weather should be chosen for the operation.—J. D., Perth.

Baits for Field Mice.—"J. M." says (Vol. XIV., p. 573) that he has caught all kinds of mice by baiting his traps with Barcelona nuts. Does he mean to say that he has caught the short-tailed field mouse or bank vole with this bait? Barcelona nuts are almost irresistible to the common house mouse and the long-tailed field mouse, and I have caught two of the three species of shrew by baiting with cheese, but I have never succeeded in catching either of the two short-tailed shrews in any kind of trap at all, and these are the two species most destructive to plants growing on rockwork. They do not destroy bulbs, but graze off the young succulent shoots of various species of Iberis and many other rock plants as clean as a sheep. These mice constitute the principal food of the common barn owl, a bird which may be said to spend its whole time in destroying vermin, but which is ruthlessly slaughtered by sportsmen, gamekeepers, farmers, and others. Every man who has a barn owl ought to be punished.—H. HANFORD CREWE, *Drayton-Beachamp Rectory, Tring.*

Nettles Under Trees.—"E. F." (p. 556) should keep the Nettles about which he enquires, mown down to the ground five or six times during the growing season; that prevents their seeding, impairs root action, and ultimately wears them out.—R. GREENFIELD.

Charcoal Burning.—The readiest way of making charcoal is to cut up the wood into lengths of about 2 ft. 6 in. or so, and if large, split it into quarters, and lay it somewhere to dry, after which it will be in a fit condition for burning. In stacking it preparatory to this, a stake should be driven into the ground, around which a heap of shavings and small sticks should be piled, and against this the wood should be placed close on end in a regular circle, allowing just sufficient room between each piece for the fire to travel freely. The stack may consist of one layer or two, according to the quantity to be burned, but it is better to build it in the latter way than to have the circumference large, as it is not only easier for covering up, but can then be charred with greater regularity. As soon as the stack is formed, it should be covered in with a good thickness of straw, except just 2 ft. or so of the middle left open to light it and set the fire going. The straw on, the next thing is to cover it with from 9 in. to 1 ft. thick with soil or sand; when all is ready apply the match and set the fire blazing. Once this gets a fair hold of the wood, the middle must be covered in, and holes pierced with a stake through the soil to let out the smoke and draw the fire to the sides till it gets hold of the mass, when smaller holes should be made and the others stopped, the object being to prevent any flame or a too rapid combustion. It often happens that the wind will drive all the fire to one side, to obviate which the holes there should be closed, and encouragement given by opening others in the opposite direction to draw it there, that the charring may be regular throughout. To prevent waste by over burning, much watchfulness is necessary, as if the fire gets too free vent anywhere, the wood is soon consumed to ashes, instead of being simply blackened through without losing much of its bulk. When the charring is complete, the fire may easily be smothered out by patting the soil close with the back of a shovel, so as to prevent all escape of smoke, when, after a day or two, the heap may be uncovered and the charcoal withdrawn.—S. D.

Names of Plants.—Correspondents wishing plants to be named will oblige by complying with the following rules: To send the specimens as complete as possible, i.e., both stem, leaves, and flowers, and fruit, when possible. To carefully pack them in gutta-percha tissue, or other impervious material which will prevent evaporation. Not to send varieties of popular flowers, such as *Fuchsias* or *Fansies*, which are best named by experienced growers of such plants, who have the means of comparison at hand. Not to send more than four plants or flowers at a time. Always to send, in addition to whatever pseudonyms or initials they may desire to use in the paper, their full name and address. To pre-pay all packages containing plants or flowers.—R. S. G.—Mistletoe is sometimes spelt Missetto, but Bentham (Handbook of the British Flora) spells it Mistletoe. As to your second question, deodorise with peat, charcoal, ashes, or dry loam. K.—*Hovea acutifolia*, a leguminous shrub from New Holland.

Smuts from Furnace Chimneys.—I have in my garden a group of houses heated by a saddle boiler, the chimney to which is carried up the usual height. The blacks from this chimney are a constant annoyance, and cover the glass roofs with smuts. What is the best way to remedy this difficulty?—A. E.

Early Melons.—Will some one recommend me two good suitable Melons for my earliest crop (scarlet and green fleshed). I intend to grow a few plants of my first crop in a span-roofed pit, also two sorts of the above named, suitable for a frame, to come in as a second crop.—J. W.

Lamp Heating.—I have erected a small greenhouse and I am anxious to keep frost out of it, I have, therefore, purchased a paraffin stove in which I am burning paraffin oil which has a strong smell, and I fear it will be injurious to the plants. Is there any other oil that would do equally well and be without smell?—S. R.

Tuberous Tropaeolums.—I have a tuberous Tropaeolum making long slender shoots, but a friend tells me that I shall not get it to blossom, he having tried them several times but could not succeed. Will some of your readers kindly inform me if it requires any particular treatment or temperature, and if it should be watered freely.—W. B. B.

Trellis Shadings for Glass Houses.—These are largely used in France, where they are called "Claisa pour ombre." Such screens are very convenient and suitable for all kinds of close shading, and they would also protect greatly from hoar frost. The links are made in France of galvanised iron, but in this more moist climate, and where the air and drip are impregnated with sulphur from coal and smoke, it would be advisable to use brass clips and rings. The price in Paris is fr.4-50 per square metre, equal to 3s. per square yard. Does anyone make them in England?—G. G.

Plants for Carpeting Bulb Beds.—I want to carpet my bulbs (Crocuses, Scillas, Snowdrops, Anemones, Tulips, Gladioli, Lilies, &c.), and the information I seek is which are about the best plants for the purpose, with a view (1) To their own beauty of flower and winter foliage; (2) To their fitness for the particular sort of bulbs below by not obstructing their growth when they appear above ground, and by their having surface roots that will not impoverish the soil for the bulbs; (3) The Saxifrage are often mentioned in this view, especially the Mossy section, but there appears to be many varieties of these, and I should like to know the best named sorts; (4) I do not want to know of many carpet plants for this purpose, but I should feel much indebted for the names and characteristics of a few (not Saxifrage exclusively), and if they afford some variety of colours in flower and foliage, the list would be all the more valuable, not only to me, but to the many like me, who dislike the bare places as much as they dread the frequent consequence, the descent of the destructive spade, where now our bulbs are so commonly found.—J. S.

Presentation to Mr William Sutherland.—Mr. William Sutherland, who has occupied the position of general nursery manager for Messrs. Ker, of Liverpool, during the last five years, was entertained to a complimentary dinner on the 20th ult. at the Aigburth Hotel, by a large number of the leading gardeners of the district and other friends, on the occasion of his relinquishing his duties with Messrs. Ker, of Liverpool, to undertake a similar post in the nurseries of Messrs. Ireland & Thomson, of Edinburgh. After the dinner, Mr. Sutherland was presented with a handsome gold watch and appendages by Mr. Hinds, of Otterspool, on behalf of the subscribers. The watch bore the inscription, "Presented to Mr. William Sutherland by Liverpool gardeners and friends, as a token of their esteem and respect. Liverpool, December 20th, 1878."

New Canadian Poplar (*Populus canadensis* nova).—This is one of the best and most useful hardy deciduous trees which we possess. In the first place, it is the most rapid growing of all our hardy trees. We have ourselves seen in the Knap Hill Nursery plants which have made 10 ft. growth in a season well furnished with branches. This will give some idea of its rapid development. It is, moreover, a tree well adapted to London, and may be seen in luxuriant health in the plantations on the Thames Embankment at Chelsea. From the treatment to which it has been there subjected, it is evident that it will bear any amount of pruning, so that it may be kept to any size or form required. It is probably the best tree we have for planting in the smoky towns of the manufacturing districts in the north of England. Its nearest affinity is with the black Italian Poplar, and, in fact, it may be described as a very much improved form of that variety, possessing greater vigour of growth, as well as larger leaves, which are retained fresh and green till a later period of the season. It is, in fact, in every way an improvement on that well-known and useful sort, and as a screen tree has no rival.—"Gardeners' Chronicle."

OBITUARY.

JOSEPH DALE, for many years gardener at the Middle Temple, died suddenly on the 31st ult., aged 65. Mr. Dale, like the late Mr. Samuel Probyn, was a most successful grower of Chrysanthemums, and was the author of a little book on their culture.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

TREES, SHRUBS, & WOODLANDS.

TREES "OF THE FUTURE."

At this time, when a new year is dawning on us, many people "take stock," as it were, not only of affairs in general, but also of their gardens in particular; and duly note down the acquisitions of the year, and the experiences gained therein. In planting trees, it is to the future we must look, and it is with regard to this point I would particularly direct attention. During the last twenty-five years, what a vast number of trees have been introduced and planted in our gardens! and of these the greater number without doubt are Conifers; so much so that those who come after us will probably term our age the "Age of Conifer planting," just as we now regard the end of the sixteenth and beginning of the seventeenth centuries as the "Elm-planting age." The question then comes, how far do we think we shall surpass the efforts of our forefathers, who have bequeathed to us such grand Elm walks, Lime avenues, and Yew hedges, as evidence of their skill and foresight? or how far shall we fall short of the results they have attained? Without disparagement to ourselves, I think we must allow that they have, in their line (that is, in planting avenues of trees that come to perfection in this climate), reached a standard of excellence we cannot hope to surpass; but, on the other hand we can safely say that, for grouping, or general effect, we have planted trees that will earn for us that gratitude given so freely, if at all, by posterity. What proportion our successes will be to our failures is altogether another question, and one that I fancy could hardly be answered favourably.

As long ago as the days of Horace we were told that we are more affected by what we see than what we hear; that we trust our eyes rather than our ears; and so it is now. We plant for the sake of immediate effect; or, struck by the infantile beauty of some new seedling tree or shrub, we cram our gardens, parks, and plantations with material that in the end proves unsatisfactory. In this respect, I daresay our forefathers would have been no better had they had the opportunity; but we may gain an advantage over them by ascertaining, as in these days of research we are fully able to do, what is the exact effect of the trees we plant when seen in their native haunts. Artists, botanists, photographers, explorers, in turn, give us the result of their labours in books, which are accessible to all, and the most incredulous eyes can hardly disbelieve what the sun has printed for us in black and white, even if the coloured sketches of the artist be distrusted by those who have been disappointed at such hands in days gone by. The only real disadvantage we labour under, is that we cannot tell positively how far these newly-introduced trees will reproduce in England the beauty they show when in perfect growth at home; but even in this case if we study with any degree of closeness their native habitats, we shall, in imitating them, be successful, both as regards present effect and future satisfaction.

Of all the trees introduced in modern days, none has been planted more universally than the Wellingtonia gigantea, and I venture to say that few are less worthy of such extensive planting. No doubt it is the fact of its vast size that has created such a desire for it, but does that make it the more generally suitable? Let us see what it is in its own country! A huge bole, towering up into the sky—a trunk, garnished with a few scanty branches, at rare intervals, high above our heads, that seem as if there to show how small they are in proportion to the trunk. The foliage is so scanty that the mid-day sun is robbed of little of its strength by the tufted branchlets even where they hang the thickest, and the whole grove more resembles a gigantic array of scaffolding poles half stripped

already for the builder, than a collection of the so-called grandest trees in Nature. Planted in a close avenue, like a French allée of Poplars, or as a single finger post that makes, as it were, a mighty gnomon in Nature's sundial, it is well placed indeed; but should it not attain its full stature in this country, where will any charm be found in it when it outgrows its youthful richness of foliage? It is well-known now that Australia can show a tree that towers up to a height of 480 ft. It is needless to say that it is only in the richest soil of a sheltered valley in the Australian Alps that *Eucalyptus amygdalina* attains such an enormous height, but it has one advantage over the Wellingtonia, namely, that when isolated, it forms a branching, round-headed tree, in shape approaching the Wych Elm, and only runs up with a long, bare stem when crowded up among other trees of like growth. If this prove hardy, and it is not very unlikely that it may be so, it no doubt will be largely planted by lovers of the gigantic in coming years.

To any one fresh from Californian coasts it does seem a little strange that a tree so beautiful and so valuable as *Taxodium sempervirens* should be so rarely seen here. In its native country it forms vast forests that, till lately, stretched for hundreds of miles on the north-west coast. Its timber—the Redwood of commerce—is valuable in many ways, and is largely used for building purposes because it burns with difficulty. In stature it does not fall more than 100 ft. short of its kinsman, the Wellingtonia, and is incomparably the more beautiful tree when full grown. It has this peculiarity, that it only thrives in the belt of land that stretches inland five miles from the coast, and on that windy shore will not grow within a mile of the sea. This is what has probably caused it to be neglected; but, in an island like ours, where a large tract there must be suitable for its growth, where it would escape the severity of inland frost and luxuriate in the cool dampness of a sea fog, such as it gets at home. Planted singly it is inclined to branch too much, and requires pruning to make it shoot up into a tree when young; but its extreme rapidity of growth, and its beauty when old, to say nothing of its value as timber, should make it a favourite with all who can plant it in the neighbourhood of the sea.

Another tree, not far distant of kin, that shoots up 200 ft. into the air, and lights up the mountain sides of Japan with its bright green, pendent branches, *Cryptomeria japonica*, has the unusual property of looking beautiful in all stages of growth, and its wood is valuable for panelling, as all Japanese travellers know who have enjoyed the peculiarly sweet scent it gives to a room. This tree, in its native country, braves the violence of a typhoon, and, when full grown, will probably stand our westerly gales better than trees that grow in sheltered inland valleys. Like the Wellingtonia, it shows to greatest advantage when planted singly or in a close alley. In Japan there is an avenue 30 miles long closely planted with this tree, so much do they admire it. As an old tree its branches, first pendent and then gracefully recurving at the tips, give it a character so marked as to suggest the idea carried out by Chinese and Japanese in the curving roof of their pagodas, which seems to have been borrowed from this source.

Two trees there are that are the most prominent as well as the most common among Japanese trees, and give that air of peculiarity which all have remarked; and yet, though hardy, they are but little planted in this country, because, in their young state, they are undistinguishable from the Scotch Fir, and these are *Pinus densiflora*, which when full grown, is a very distinct and handsome tree, with a massive, rounded contour; it surpasses in size and beauty the Italian *Pinus Pine*, and is, in its native country, of far more rapid growth. This should be planted as an isolated specimen tree, and will thrive under the same conditions as the Stone Pine. The other is *Pinus Massoniana*, a tree still more hardy, and of the wildest and most original growth, so like a Scotch Fir in its young state that it is not surprising it should be little known or planted; but as soon as it attains to middle age, its eccentricity of growth begins to show itself, and in old age it assumes the shape of a Cedar of Lebanon. Planted thickly in clumps, this tree will, in the space of a lifetime, reproduce something of Japanese quaintness in our parks; and to those who plant "for the future," this will in the end repay their patience, and prove quite unlike any other species of *Pinus*.

Before making any remarks on other members of the great Coultier family, there are yet two of the true Pines that must not be overlooked. *Pinus macrocarpa* (or *Coulterii*) is a Californian tree that certainly will gain much admiration in days to come. Perfectly hardy, exceedingly large in leaf, branch, and fruit, it is handsome in every way; its branches are very wide apart, and the branchlets few, so as to give space to show off the size of each. Like *Pinus insignis*, it is a rapid grower, but is, if I am not mistaken, a far superior tree in every way, and its hardness makes it deserving of a place in every well-furnished garden where there is room for a large tree. The last of this family which I will mention at present is *Pinus Laricio*. Its beauty in its native Corsican forests and its value as timber make it so desirable a tree that, at the risk of being tedious, its merits should be extolled. Introduced a hundred years ago, it has proved itself thoroughly hardy in all parts of the kingdom; and, though well known, has not yet nearly reached the favour it merits. Like the Scotch Fir and the Larch, it is deserving of universal growth.

E. H. WOODALL.

ORNAMENTAL FORESTRY.

Few subjects present a better field for the display of taste than the planting of trees, and there are very few situations in which they may not be made highly ornamental as well as useful, for when they are chosen and arranged with taste, they give variety to the most tame and level country, charm to the waterside, beauty to the slopes, both from the trees themselves and the shadows which they cast, and relief to the naked hill, upon whose summit "the labouring clouds do often rest." What thinning is to the overcrowded plain or valley planting is to the hill—the one relieves the darkness, and the other the bleakness of the scene. In ornamental forestry, as in landscape gardening, the works of men eminent in their day and generation have fallen into disrepute from the ignorance and ambition of their followers and imitators. Pontey pruned, and his successors lopped unmercifully; Brown substituted curves and sweeping outlines for the straight lines of his predecessors, and his imitators gave a meandering course to every stream and piece of made water, and a serpentine form to every pathway and fence. Whoever aims at producing the best effects from his planting, must study closely the habits of the trees with which he operates, their rates of growth, the dates of their maturity, the periods of their decay, their varieties of tints, and their adaptability to the soil, situation, and climate. In striving to produce grandeur he must adhere to simplicity; in seeking to attain variety he must avoid incongruity, for while a reasonable amount of variety never fails to please, too great an admixture bewilders, and too regular a succession, either of tints or forms, destroys the whole spirit of planting. The carrying out of all minor details, such as the planting of particular quarters and detached parts, will be found comparatively easy, but skill and judgment are required to blend the seemingly unconnected parts into one harmonious whole.

The perfection of the planter's art will be as apparent in the skill which he displays in concealing deformities, as in that shown in developing beauties; and while in his variety he may approach intricacy, and thereby arouse curiosity, he must maintain throughout his composition, both connection and continuity. His tints, like those of the painter, for whom he prepares the picture, should consist of both warm and cool. If in autumn he can display them as wild as those of the evening clouds, to which his planting will form a natural and appropriate foreground, so much the greater will be his success. In revealing beauties or concealing defects, he must on no account interfere with freedom or extent, but so blend his masses of plantation and his open grounds, as to hide the limits of both; thus the extent of his work will not strike so much by its vastness of dimensions, as by the nobleness of its effect, and, as it is the experience of its utility which gives the enduring charm to beauty, so, in the choice of his trees, he should select those which, after they have gratified the present generation of beholders, will greatly benefit posterity. In surveying plantations we often meet with scenes which strike us by their incongruance or unfitness to the locality; such,

for instance, as the lean outline which a few scattered Poplars or Firs impart to a grove in the immediate vicinity of a noble-looking mansion. The effect of their unsocial tops is much the same in any considerable mass of round-headed trees. Another, is the insignificance imparted to a house of any pretensions when it is flanked by trees which rise very much higher than the building itself, for, as the trees continue to grow, the house appears to sink. A third is the effect of a grove of Firs upon an open common, or in any situation where they can be browsed by cattle; for as they lose their lower sweeping branches, their ornamental effect is completely destroyed. The mutilated forms of closely-pruned Elms, with nothing left but bare trunks and tufted tops, become permanent blotches upon the face of the landscape, for if, after such treatment, the side branches are again allowed to grow, the tops decay, and it is only by subsequent pollarding that their lives can be saved. Whilst the ornamental planter aims at the production of breadth of light and shade, he should bear in mind that density is effective mainly as a contrast, and it is by no means the thickest grove or the most compact tree that yields the greatest amount of pleasure to the beholder. Those trees which present fairly open heads, with alternations of canopy and recess, and consequently of light and shade, give the greatest variety to a plantation, and this may be increased to an almost endless extent by a choice of trees suited to the configurations of the ground. In the vicinity of the mansion beauty and picturesqueness must sometimes yield to comfort and convenience; but as the planting recedes it may pass from grace to wild luxuriance, until at last it attains the freedom of a forest.

The continuity which is so essential to the completion of a landscape may sometimes be maintained by the selection of species of trees which adapt themselves by form and outline to those of the adjoining masses of plantations. Thus, Alders as they grow old so much resemble Oaks that a superficial observer often fails to detect the difference; hence their utility in keeping up the appearance of a continuance of Oak plantations in soils too wet for the Oak to flourish. The Alder, too, succeeds in some cold-bottomed land, and upon some exposed sites where the growth of the Oak would be very slow and its appearance stunted; and as the fastest-growing tree is nearly always the most graceful and ornamental, a vigorous Alder, or even a well-grown Willow or Poplar, is preferable to a languishing Oak. In clearing for the sake of giving variety and effect to woods of large extent, it is too much the custom to sweep away the whole of the underwood, as well as bushes of all kinds, so that all bonds of connection between the remaining groups are completely severed. This gives an appearance of abruptness to the planting, and a certain degree of isolation to what is left. Whatever tends to diminish abruptness softens the whole scene, hence the beneficial effects of thinning out the front lines of dense woods, where such margins are much in sight and fairly sheltered; the detached trees break up, or very much soften the approaching gloom. But in such situations very light and elegant trees would be, to some extent, out of place. One of the finest effects produced by plantations is observable when, from the valleys and plains below, the trees appear to climb the heights, following the line of the crest and the direction of the spurs, not in narrow belts, but in broad masses, the different species gradually intermixing, and entirely changing with the heights, from the luxuriant Oak, Elm, and Ash below, through zones of Beech, Sycamore, &c., to the Pine-crowned summit. Such woodlands will appear either to mount from below or flow from above, according to the situation of the greatest breadths of plantation and the directions in which they radiate; and the occasional openings, with their warm nooks for the homestead, and their enclosures for well-sheltered, arable or pasture lands, will give a variety and a richness to the country which is, if not unattainable, at any rate unobservable to the same extent, in more level districts. These occasional openings are also very effective in marking the degree of activity in any well-wooded and rising ground.

A. J. BURROWS.

The Red-berried Elder.—We have several plants of this Elder, about 8 ft. high and as much through. It is quite hardy here; even

the late severe weather does not seem to affect it, while Bays, Portugal Laurels and Laurustinus are quite blackened. When in fruit I consider it to be one of the best shrubs which we have. There is nothing that equals it in the shrubbery during the autumn. The berries hang in clusters like bunches of grapes. As Mr. Grievé states, birds are very fond of the berries, and devour them with as much relish as they do currants.—A. McINTOSH, *Laxton House, Berwickshire.*

ORNAMENTAL SHRUBS IN THE SOUTH OF IRELAND UNDER SEVERE FROST.

As during the three weeks immediately preceding Christmas we, even in this usually mild and temperate locality (the seaboard of the county of Cork), experienced the severest weather, and the greatest intensity of frost, that has been known here for forty years, the thermometer having on more than one night fallen as low as 17° Fahr., thus showing 15° of frost, when 5° or 6° is the most we usually experience, I think that an account of the way in which some of my more uncommon and doubtfully hardy shrubs have withstood this ordeal may not prove uninteresting to those of your readers who admire and cultivate that class of plants. The Veronics, which were nearly all either killed altogether or down to the ground in the severe winter of 1860-1, when nothing like the degree of frost was reached that has this winter been registered, have this year, I am happy and surprised to say, passed altogether unharmed; even some small cutting plants of new varieties, received by post from France late last autumn, and planted out in a border at the end of my garden without any protection, are uninjured, and the variety *V. Girwoodiana*, supposed to be decidedly more delicate and tender than the others, and which I had lost more than once previously, is also unharmed; *Pittosporum crassifolium* had its young top shoots only browned; *Coprosma lucida* and *Cunninghami* were only very slightly injured; *Banksia australis* is uninjured; *Eurybia lyrata*, *ramulosa*, and *Traversi* have been punished, the first and last named most so; they look as if they would lose most of their leaves, but the wood seems uninjured, and will, I think, break again; *Melaleuca hypericifolia* and *Pomaderris elyptica* seem killed; *Escallonia arguta*, a small, young plant is uninjured; the silver variegated form of *Fatsia japonica* usually known as *Aralia Sieboldi*, has passed uninjured, while the ordinary green form is considerably browned; *Berberis nepalensis* and *trifurcata*, usually considered tender and requiring the protection of a greenhouse, are quite uninjured, as is also *Thuja Donniana*, the beautiful Fern-leaved form which I have never seen planted out save in this neighbourhood, as even at Exeter it was grown in tubs which were wheeled into the Camellia house in the winter; it is apparently, however, much harder than it was thought to be. *Aralia Schoefleri* and *quinquefolia* are a good deal injured; *A. Standishi* and *Abeli* not at all. *A. mexicana*, heterophylla, and *Cunninghami* have suffered, but not seriously. *Olea exelsa*, tops of young growth destroyed. *Garrya macrophylla*, which is supposed to be tender, and is grown in the temperate house at Kew, is quite uninjured, though the superincumbent weight of the first heavy snow fall in November, broke the centre out of my large specimen of this fine-foliated shrub. *Griselinia macrophylla* (tree) (the variety usually known under this name being really *G. lucida*) is perfectly hardy, whereas *G. lucida*, even against a wall and protected by Fir branches, is much injured. Of the variegated *Phormiums*, *P. tenax*, var., has suffered most, and is, I fear, seriously, if not fatally injured. *P. Colensoi*, beyond being beaten down by the weight of snow, does not seem to have suffered, and *P. Veitchii* is altogether uninjured and its leaves quite upright. *Embothrium coccineum* seems quite uninjured save a few of the older leaves turned brown. *Cupressus Corneyana* the true funeral Cypress so seldom met with, and supposed to be only half hardy, is quite uninjured, and seems perfectly hardy; *Enonymus ambratus*, supposed to be tender, is quite uninjured; *Cistus vaginatus* is a good deal browned, but will, I think, survive; *Habrothamnus corymbosus* and *Nowellii*, though against a wall, have lost nearly all their leaves, but their stems seem uninjured; *Ceanothus africanus* is seriously injured, if not killed; *Podalyria straciiflora*, *biflora*, and *setacea* are much injured, but will, I think, survive; *Choisya ternata*, which is usually supposed to require the protection of a wall, planted out in the open shrubbery, is quite uninjured, and may be considered perfectly hardy; *Aralia trifoliata latifolia* is much injured, but will, I think, survive; *Genista foliolosa* is a good deal injured; *Escallonia coccimbensis* is uninjured; *Donodonea Burmanni* and *viscosa* are a good deal browned, but the distinct and pretty *D. Boroniifolia* seems quite uninjured; *Abutilon* or *Sida villosa* has suffered, but not seriously; *Plagianthus pulchellus* seems quite uninjured, and *Benthamia fragifera* is also, contrary to my expectation, unharmed; *Viburnum Awakurki* is a good deal browned, and the foliage much discoloured but not seriously injured. I am sorry

to be obliged to confirm M. Carrière's opinion in the "Revue Horticole" for December 16, that the beautiful and most distinct Chimbrazo Pampas Grass (*Glycerium jubatum*) is much less hardy than the other members of the family known to us, all the tops of the shoots of my plant being much injured, whereas the other varieties are quite unharmed. The *Apongeton distachyon* in my pond has not withstood the severity of the weather by any means so well as in Mr. Parker's nursery, all sign of blossom having disappeared, and even the foliage ceased to float on the top of the water as it usually does.

Belgrave, Queenstown.

W. E. GUMBLETON.

GOLDEN-LEAVED CHESTNUT.

(*CASTANEA CHRYSOPHYLLA*.)

For Lord Ducie's information (p. 8) allow me to say that I found this Chestnut in the form of undergrowth, from 4 ft. to 6 ft. in height, in a forest of *Pinus insignis* to the south of Monterey, in Upper California. It has been found to the north in other localities in California, but I had not the opportunity of seeing it elsewhere. The few bushes of it which I saw were evidently not at home in the exceedingly poor, arid soil of that region, and the nature and condition of the soil will possibly account for their small size compared with that of plants of it growing in the rich, damp soil and moist climate of Oregon; there it is said to reach 40 ft. or more in height. It is probable that it was from the few scrubby bushes growing near Monterey that the first imported seeds were gathered, as Mr. Lobb, the collector, made Monterey his headquarters for a year or more. All the plants that I have seen of it in Britain resembled in size and habit those of Monterey, and the only exception I have heard of is the fine plant described by Lord Ducie. The Tortworth plant has evidently found a suitable root run in the soil derived from the old red sandstone. I believe that all the species of Chestnut (*Castanea*) prefer arenaceous soils to others. The largest and healthiest plants that I have seen of the Spanish Chestnut were growing on the new red sandstone, but in the least oxidised strata. Nevertheless, I cannot think that a poor sandy soil will suit the examples of the golden-leaved Chestnut now in this country. It is a fine evergreen, but, if I am right in thinking that all the plants of it now growing in Britain have originated from the few at Monterey, it is doubtful if they will ever fully represent the ornamental character of the species. We must look for this in the hardier, better-constituted seedlings from the Oregon habitat, though with those we now possess it seems to be more a lack of stamina than of hardness. I have just examined a few plants and find that they have entirely escaped injury from the late severe and, to other plants, destructive frosts.

Elvaston Nurseries, Borrowash, Derby.

G. SYME.

CUTTING AND FELLING GARDEN HEDGES.

A HEDGE that is made of any plant that sheds its leaves in autumn, should never be cut in summer or autumn until after the leaves have fallen, unless in the case of those that are strong and vigorous, and that also have attained the full size to which they are required to grow, for the reason that nothing tends to weaken a deciduous plant more than a reduction of its shoots and branches whilst they are covered with leaves. There are two distinct purposes for which garden hedges are employed, viz., as a fence and as a screen. In the latter capacity they are often used for separating the useful from the ornamental departments, and for this purpose they need not be of such a substantial character as when used as a fence; they may therefore be kept cut much narrower, and whether composed of Beech, Yew, Privet, Holly, or Quicks, they need not from the first be kept headed back so closely as if required to branch out in a way to render them more impervious; on the contrary, they may be allowed to run up more quickly, simply keeping the sides trimmed up with no more breadth at the bottom than is necessary to allow the lower branches to get light enough to keep them healthy and thriving, a condition more likely to be maintained than if cut quite perpendicularly in the old-fashioned manner with the top square, an ugly and formal shape, and one in which a hedge can only be kept healthy when allowed to grow to a very considerable breadth from bottom to top. In the case of young enclosure hedges round gardens or orchards, the first consideration is to manage them from the commencement so as to secure a close, impervious bottom; this can only be accomplished by cutting the leading shoots down sufficiently low the first or second year after planting to cause them to break back near the base, and each subsequent year to shorten the strong, erect growths, enough to cause them to branch out still further; this will have the effect of throwing additional strength into the lowest branches that occupy a horizontal position. It is the undue haste

to get the hedge up to its required height too quickly, so often apparent the third and fourth year after planting by not cutting the upright growth low enough, that spoils half the hedges that are planted, especially when the lower horizontal branches are cut too closely in, a practice which tends to aggravate the evil by throwing undue strength into the upright growth. When hedges that are required for the purposes of a fence have got bare and naked at the bottom, in the way that such as are composed of Quicks will do if not well managed, they should be felled down to within 9 in. of the ground. When very strong they will require a saw or a light axe, which is better. The operator should stand on the lowest side of the fence, in the ditch if there be one, so as to be well under his work, severing the whole, both the strong and weak wood, in a slanting direction, with an upright stroke, by which means he will make a clean cut, and avoid splitting the stools in the way that results from cutting downwards, and which has such an unworkmanlike appearance, and is still worse in its effects by causing the young shoots to push weaker than when the stools are cut without splitting; but as there is much in the look of a garden hedge as well as in its answering the mere purposes of a fence, the felling and retention of an old hedge in the way described is not to be recommended if it be full of gaps where there is no living wood, for, although the defect may be in some measure made good by the introduction of young plants, as is often done to fill up the vacancies, still it gives the whole such a patchy look that it should never be tolerated in a garden where there are any pretensions to an orderly appearance; in such a case it is much better to grub up the old fence and plant afresh. It is often said that there is considerable difficulty in getting a young hedge to grow in the same place from which an old one has been removed, which is true when the exhausted soil is planted without any admixture of fresh material to renew it, but not if 6 in. of new soil, such as is procurable in country places from the roadsides, commons, or in any place where the surface spit can be spared where buildings are about to be erected, is added. Should these sources fail, street sweepings in the neighbourhood of towns, or road scrapings in the country will do mixed liberally with the old mould; 3 in. or 4 in. of rotten manure should at the same time be dug in. Many there are who manure liberally all the other plants they cultivate, and who never think of giving anything to encourage the growth of a hedge, which, not only in the first preparation of the ground, but for some years until fully grown, will well repay for liberal manuring, especially where Quicks or Holly is used.

T. B.

QUALITY OF WELLINGTONIA TIMBER.

In noticing several exceptionally fine specimens of *Wellingtonia* (p. 578), Mr. Berry speaks of its being yet premature to form any decided opinion as to the quality and durability of the timber of the *Wellingtonia*. But, concerning that, I think there is but little room for doubt, unless the tree is an exception to all others of a quick-growing character, for, taking a broad view of the subject, quality, which we may set down to mean strength, toughness, and durability, is present proportionate to the time required for its formation. The wood of quick-growing trees is light and spongy, conditions at once opposed to strength and lasting capabilities, and limiting its use for all but exceptional purposes. Although looked at upon the principal of small profits and quick returns, light timber, such as Poplar, may, on some descriptions of soil, be found as remunerative to the grower as the slower-growing, denser-wooded Oak, Elm, Ash, &c. I think we may take it for granted that the *Wellingtonia*, in common with other rapid-growing Coniferous or Taxaceae trees that have not yet in this country had time to give conclusive evidence of the quality of their wood, will be in no way different from other species of trees of which we have had enough time to judge correctly in this respect; in fact, the natural laws which govern the development of vegetable life in the formation of woody fibre, appear to point generally in one direction, which is that slow growth means comparative strength and durability. Of late years *Sycamore*, of even moderate growth, has been so much in request amongst machine roller makers that the price it fetches never could have been anticipated; the short-fibred, somewhat brittle nature of the wood renders it of comparatively little value for purposes where it will be subject to a strain, if for any length it is unsupported. To this, no doubt, coupled with the fact that the use for which it is now required was non-existent when trees which have attained any considerable size were planted, may be attributed the scarcity of its timber, for had it existed in anything approaching the quantity that some of our more generally used woods do, the particular purpose for which it is now employed could not have exceeded the supply. Good Red Willow appears to be almost equally in request than which nothing that has yet been found seems to do so well for

railway carriage and waggon brakes. This Willow, although, like the rest of its species, not hard or close in texture, is, nevertheless, so remarkably tough that it answers well for many purposes to which it is not often put; and, moreover, it grows fast on fairly good soil.

T. BAINES.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS.

Beech Trees and Underwood.—Allow me to confirm Mr. Knight's statements (p. 579, vol. XIV). About a year ago I visited Floors, at a time when I was specially interested as to the best subjects to form undergrowth beneath forest trees, and I was shown masses of *Rhododendrons*, *Yews*, and *Laurels* growing most profusely under the fine old *Beeches* and other forest trees that may be seen there; places that used to be naked plains some years ago, are now well furnished with underwood.—ROBERT GREENFIELD, *The Priory Gardens, Warwick*.

I forwarded the paragraph in *THE GARDEN* a couple of weeks ago, by Mr. Hossack, to a gentleman at Alderly Park in an excellent position to furnish information on the subject, asking him if he could corroborate the statements in *THE GARDEN* as to the luxuriance of the *Rhododendrons*, &c., under the *Beeches* there. He has just replied to my enquiries, and in his letter he states that the *Beech* wood referred to in *THE GARDEN* is called the "Beech wood," and contains some of the finest and odest trees in England; also that there are large quantities of *Rhododendrons* in the wood in question, but there are certainly neither *Rhododendrons* nor any other kind of underwood growing where the *Beeches* occupy the whole space overhead, nor any under the *Beeches* where they are growing thickly together. This is rather a different statement from that which said the *Rhododendrons* were to be seen growing, flowering, and seeding right up to the trunks of the trees, in the wood alluded to.—J. S. W.

Rhododendrons grow here under *Beech* Trees in the greatest possible luxuriance, and flower very fairly considering the shade to which they are subjected, and they also make one of the best covers for game. The *Yew*, *Holly* and common *Laurel* also grow very well, but they do not make such dense cover as the *Rhododendrons*. On the top of Boxhill, on the chalk, may be seen considerable numbers of fine *Beeches* growing amongst the Box, which grows quite as freely under the *Beech* as under Oaks, and it makes one of the densest of covers. It should be mentioned, however, that the Box in this case is indigenous. In this neighbourhood, another instance occurs on the chalk at the Denbies, where, in a rather dark *Beech* wood Box is growing very freely, and in this case it has been planted.—J. BURNETT, *The Despaine, Dorking*.

Hardiness of Hydrangeas.—In *THE GARDEN* (Vol. XIV, p. 579) I find that Mr. Groom thinks that *Hydrangeas* require to be protected against severe frost. Permit me to say that *Hydrangeas* are much more hardy than is generally supposed, and that they are not so difficult as regards soil as is generally imagined. I have about one hundred plants in a border on the north side of my garden, planted in ordinary soil in front of some trees, *Lilacs*, and other shrubs, with the roots of which they struggle for existence. Nevertheless, without any protection, the *Hydrangeas* have stood over more severe winters even than that of 1871, and in summer are magnificent. I may, perhaps, add that a few were destroyed in Dec. 1870, but only those which were exposed to the sun in fine weather; those completely shaded escaped.—JEAN SISLEY, *Lyons*.

Trees and Foundations of Buildings.—A curious instance (says a correspondent of "The Builder") has lately come under my observation of the mischief to the foundations of buildings which may sometimes be caused by the roots of trees. In the case to which I refer attention had been drawn to an increasing settlement in the wall of a school, built some five years since. It was clear that something was wrong underneath, and so underpinning was determined upon. When the ample and well-executed footings and concrete had been examined it was discovered that the roots of a row of *Ontario* Poplar trees which stood in a neighbouring garden, some 20 ft. or 25 ft. distant, had worked their way down to the depth of some 5 ft. to 8 ft., and had completely disintegrated the concrete. The roots were mostly of very fine texture, some mere fibre of no greater substance than human hair, and a few larger ones as thick as a man's little finger, all entwined in the concrete. The soil was a soft loam, and an experienced horticulturist assures me that although the roots of *Poplars* traverse strata which would repel other trees, yet they generally strike only to a shallow depth. In this instance the roots had devoured all the lime in the concrete in the lower part, which was crumbling away. The upper part, where no roots existed, was perfectly sound. Instances of strong roots throwing down walls are not uncommon, but I find on inquiring of experienced men that the insidious work of these distant trees is unusual. The new foundations, &c., have all been executed in Portland cement concrete, and to a considerably greater depth than before, and warning given to the occupants of the adjoining garden.

THE INDOOR GARDEN.

NIPHOBOLUS HETERACTIS.

UNFORTUNATELY this elegant and free-growing Himalayan Fern has been distributed under the erroneous name of *N. Heteractis*. We say unfortunately, because it is exceedingly difficult to displace a false name after it has once got into general use. This error probably originated in a slip of the pen, and although very slight in appearance, it so completely alters the meaning conveyed by the correct name that it is all the more desirable to correct it. The name *Polypodium Heteractis* was given by the late Professor Mettenius (Linnaea xxxvi. p. 140) to this plant, in allusion to the diversity of the rays of the starry scales with which the under surface of the frond is furnished. Further, it is by this character, as well as the difference in the size and shape of the fronds, that *N. Heteractis* is distinguished from the Japanese *N. Lingua*. These stellate scales are scattered over the dense indumentum or pubescence common to both species, and are quite visible to the naked eye, and they are probably imperfect sori. The fronds of *N. Heteractis* are larger than those of *N. Lingua*, being often 18 in. long, including the stipes, and the blade is more or less rounded at the base, instead of gradually tapering downward into the stipes, and it tapers into a tail-like tip. Altogether it is a more vigorous plant than its Japanese congener, and is a native of warmer regions, being found at low elevations in the Himalayan mountains, and also in Borneo. Mr. John Smith has somewhere given this Fern the name of *Niphobolus latus*, but I cannot find that this name was ever published with a description. Indeed, it does not occur in his last work on Ferns, and was probably given only to dried specimens which he at some period distributed. *Niphobolus Heteractis* was sent out by Mr. B. S. Williams, of the Victoria and Paradise Nurseries, in 1876, and the accompanying engraving was prepared from a plant in his possession.

*Niphobolus heteractis*.

W. B. HEMSLEY.

Eppe's Potting Soils.—Mr. Eppe, Vauxhall Station, has sent us various samples of peat, loam, and sand, of good quality. The peat is obtained from some high-lying land abounding in common Fern, or Bracken, and Scotch Fir plantations, the subsoil of which is dry

and sandy. From such a position as this the soil does not become sticky, wet, or harsh, from too much watering or drought, a circumstance not to be lost sight of when selecting soil for potting.

TEMPERATE OR INTERMEDIATE HOUSES.

I doubt if there be any kind of plant structure capable of affording so much real enjoyment as that which is commonly termed the temperate or intermediate house. In it we may assemble many and varied types of vegetation, as the temperature which has to be maintained therein will be sufficiently high to insure the well-being of many natives of tropical lands, whilst, at the same time, a considerable portion of the inhabitants of the cooler regions will be benefited by the slight stimulus which they will receive therein during the colder months of the year. The temperate house will range during winter from between 55° by day and 45° by night; it should not be more, and may occasionally be less without fear of injury. In this gentle warmth, Cinerarias, Cyclamens, Roses, Deutzias, bulbous plants, and a host of others may be forwarded into bloom. Palms, Ferns of many kinds, Aralias, and other fine-foliaged plants, will also flourish under such conditions, and many species of Orchids will find a congenial home therein. Such a house may be kept gay from November till June. The best form for a house of this kind is a span-roofed one about 12 ft. in width. This will afford space for a 3 ft. path and a 4½ ft. stage on each side. Ample ventilation should be provided at the top, but a single board to open the length of the house will suffice for the admission of air at the side. If the house is to be employed in summer for the growth of such plants as require a comparatively moist, close atmosphere, such as Ferns, Dracenas, &c., then a flap here and there in the brickwork will be all that is needed. Houses of this description are not only useful, but may be made to assume an ornamental appearance during the winter months. In order to attain this end, a selection of plants should be made which will afford considerable variety of form and colour. In many plant structures, the path on each side is bounded by a brick wall, on which the stage rests; but, in the present instance, I would recommend that it should be supported by light pillars, thus leaving an open space under each stage which will be found useful. The constant moisture and filtered light in such

a place supply just the conditions in which many Ferns delight. If the surface be covered with a sufficient quantity of rough, fibrous peat, in which exist pieces of sandstone, clinkers, and other drainage material, *Selaginella denticulata* and other species of Club Moss, Maiden-hair and other Ferns, may be planted, and will flourish and form a verdant carpet, pleasing to the eye, and in every way preferable to ugly brick walls.

In the way of flowering plants we shall find that double *Primulas* and *Epiphyllums* do remarkably well in the gentle warmth afforded them in such a house. The *Primulas* should occupy the lightest situation, and if placed upon inverted pots so as to slightly raise them above their associates, they will flower freely the whole winter through, and as they combine soft pleasing colours with considerable elegance of foliage, they will fully deserve the prominent positions thus accorded them. *Epiphyllums* may be grown either as pot or basket plants; they are beautiful in every way, but they show themselves off perhaps to the best advantage when well established in baskets and hung up near the roof. Being naturally of a pendulous habit they lend themselves well to basket work and display themselves better than when below the line of vision. *Linum trigynum* and *Pentas carnea* are both free-flowering subjects and easily managed. The latter is too seldom seen in cultivation; it is of very easy culture, floriferous, and the bloom is of a soft and delicate hue. Bulbs of all kinds, *Cinerarias*, *Deutzias*, *Spiræas*, &c., will succeed extremely well in an intermediate house, and will develop their flowers in a much more perfect manner than when subjected to the more hurrying influence of a strong or forcing heat.

In selecting plants which are remarkable only for beauty of foliage we must choose those which possess distinct and characteristic features. Amongst Palms we find types possessing grace and elegance, whilst in the large and varied family of *Dracænas* may be found examples of massive, sturdy development, the effect of which is enhanced by a free and graceful outline. To the merits of the Fern tribe it is scarcely necessary to advert. They increase every year in form, and no plant structure, in which a miscellaneous collection is grown, can be considered complete without them. Had we nothing but these three families upon which to rely we should have no difficulty in producing a good effect. Well grown specimens in 6-in. pots of *Areca lutescens* and *aurea*, *Seafortia elegans* and *robusta*, *Chamerops excelsa*, *Phoenix dactylifera*, *Livistona borbonica*, and *Corypha australis*, look well if placed here and there at intervals so that each plant may be distinctly seen. *Dracenas*, *Aspidistras*, and the more robust-growing Ferns, such as the *Alsophilas* and *Dicksonias*, should also occupy prominent positions. Around and amongst them will be arranged the dwarfier forms of Ferns, flowering and other plants, so that the whole space may be fairly covered without any undue crowding. Additional interest may also be given to such a house by the introduction of such kinds of Orchids as will thrive in the temperature maintained in it. If there be a back wall, it may be draped with *Ficus repens*, and *Tropæolums* of the winter-flowering section may be trained up the rafters. Nothing gives a better finish to a plant house than a few hanging baskets well established with suitable subjects, such as *Goniophlebium subauriculatum*, *Davallias*, *Adiantum Capillus-Veneris*, *Platycoerium alciornae*, *Columarias*, *Russelia juncea*, &c., whilst a few Orchids, either on blocks or in baskets, will still further increase the effect. Plants of a drooping character, such as *Isolepis gracilis* and the variegated *Panicum*, may be so placed as to partially drape and break the rigid edges of the stages, so that by a skilful disposition of the plants there need be but little of the interior of the structure visible.

In such a house as that just described one would not naturally attempt the culture of such plants as *Ixoras*, *Crotons*, &c., but as I have endeavoured to show there are plenty of beautiful subjects that will enable us to dispense with their presence.

J. CORNHILL.

Bijflect.

Begonias and similar plants. The best method of cultivating this *Justicia* is to insert cuttings of it in March, and grow them in a cold frame during the summer months. Early in autumn transfer them to an intermediate house. A mixture of loam, peat-mould, and sand, with a little rotten manure, suits it well, and 5-in. pots will be found the most convenient for decoration purposes.—A. HOSSACK, *Ragley, Alcester.*

HEATING AND VENTILATING IN COLD WEATHER.

I place these two in juxtaposition for the obvious reason that the one forces heat into glass houses and the other lets it out. This statement, however, by no means includes all the uses of either heating or ventilation, but it places the two main purposes in direct contrast and striking opposition, and this view of the matter needs to be constantly enforced. Much of the waste of excessive heating, most of the evils of reckless ventilation, originate from the lack of a proper adjustment between the two. Economy, as well as the well-being of all plants under glass, pleads that no more heat should be given than is necessary; not only is all excess of heat superfluous, but it is also injurious. It weakens, enfeebles, and discolours plants in flower, and invites the inroads of insects and the attack of disease. All this is bad enough, but still worse results mostly follow excess of heat. Hardly has the temperature been found to be too high, than much or little of the external air is suddenly admitted to lower it. This seems such a simple and natural operation that it is performed almost mechanically, and very much as a matter of course, yet few things are more dangerous and injurious to plants than this sudden lowering of artificial temperature in cold weather by a rush of external air. The plants are thus subjected to a severe draught, and catch cold as suddenly and severely, though they bear it more silently than we do ourselves. Unfortunately, too, they do not show the injury at once. Thousands of plants are crippled and finally killed by chills, though the cause is never suspected, and no injury may be manifest till months afterwards. It cannot, I think, be too often repeated that warm air is moist and that cold air is dry. No sooner does the hot air rush out through the open ventilators and the cold air rush in than the latter fastens on every flower, leaf, and stem, and remains sufficiently long on each and all until it has quenched its thirst. The quantity of cold air can thus drink up out of those delicate surfaces and substances may be measured almost to a nicety by the difference between the internal and external temperature. The greater the disparity the more the air drinks and *vice versa*. Hence the superlative importance of so nicely adjusting artificial heat to the internal wants of hothouses as to ventilate but little, if at all, in cold weather. But then there are those sudden gleams of sunshine that often violently disturb the temperature of our glasshouses even in winter. These matter little. With the careful regulation of fire-heat on rational principles, with an eye to the probabilities of sunshine, no injurious amount of heat is likely to come from the latter; in fact, a rise of 10° or even 15° of heat from solar influences is not injurious, but often the contrary, and those who think otherwise may safely try such advances of temperature in their own practice. They will assuredly find that such, or even greater, advances of temperature by solar heat will at least do far less injury to tender vegetation than the sweeping down the temperature by an inrush of cold air and an outrush of hot air. Much has also been written on the absolute necessity of a change of air in glass houses. Heterodox as it may appear to many, I have no hesitation in asserting that such necessity has not been proved, and, had it been so, it may be contended with equal force and truth that such changes are always being effected without our aid and in spite of our hindrances; for, whatever complaints may have been made against the want of sufficient ventilation in some of our modern glass houses in summer, no cultivator has yet found fault that mechanical ingenuity, close-fitting workmanship, or large panes, has made his glass house too close for winter or early spring. The chinks in the roof so much desiderated—for the colouring of Grapes—will not be held to be equally useful for the swelling of winter berries, or the forcing of flowers or Grapes at Christmas. As new plants need more heat, give less outside air in winter. Indeed, conservatories, greenhouses, and, assuredly, plant stoves and orchid houses, may be almost hermetically sealed from November to February, not only with impunity, but with manifest advantage at all times and seasons when the thermometer falls below 45°. Such practice would cut down the coal bill by nearly a half in many gardens, while it would also preserve the plants in more robust health, and help to clothe them with greater beauty.

D. T. FISHER.

Justicia speciosa a good Room Plant.—At this season of the year I find this to be a most useful plant for the decoration of drawing rooms. The flowers, individually, do not last long, but as they open successively in profusion, even in rooms, they are invaluable. Their colour (purplish-pink) associates well with that of

Alsophila pigmaea.—This is a charming miniature species of Tree Fern, and a most beautiful subject for table decoration, although

I fear that it is at present too rare to be much employed for that purpose. The stem is very slender, and the fronds of a lustrous green are disposed in the most graceful manner. It is altogether a gem amongst Ferns, and one which should find a place in the most select collection. Never attaining great dimensions, it is admirably suited to small houses, and, when placed in a prominent position, cannot fail to command admiration.—J. CORNHILL, *Byfleet*.

HEATING SMALL PLANT HOUSES.

ADVERTING to the remarks of "A. D." respecting this subject, allow me to say that I have a heating apparatus which I have found most convenient and economical. It consists of two 2-in. iron pipes (a flow and return) running along under the front stage of the greenhouse, and connected by small pipes with a gas boiler which is enclosed in a brick chamber in one corner of the house. A small iron door in the outside wall of the house communicates with this chamber, and a zinc pipe carries the fumes from the chamber to the outer air. The burner used for the gas is an atmospheric burner with a ring of jets, such as is used for cooking, and this is sufficient to maintain in my little house (8 ft. by 6 ft.) a temperature of from 15° to 20° above that of the air outside, and with a greater length of pipe it would efficiently heat a house double the size. I have at times used this apparatus for a fortnight at a time without further attention than keeping the pipes filled with water, and its management is so simple that a lady could use it without soiling her fingers. In laying on the gas care should be taken that all pipes out of doors should be of iron and of sufficient bore to obviate the risk of any water that might accumulate in them getting frozen in hard weather, and a syphon should be provided in the lowest point of the gas pipe to allow of such water being removed.

Brixton.

W. J. T.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Solanums Best in Poor Soil.—Some of these most useful plants for winter decoration, which were grown in rich soil last year, made plenty of wood but did not form half so many berries as those growing in very poor soil. In future I shall therefore give preference to soil poor rather than rich.—CAMBERTON.

Primula sinensis fimbriata.—Primulas are often raised in too high a temperature. Those plants are best which are brought on steadily from the time the seeds are sown till the plants bloom. There ought not to be any necessity to pinch off premature flowers, as such flowers plainly denote misdirected force, and are out of place. A warm greenhouse, or a slightly heated frame of about the usual greenhouse temperature, say about 50° during the night, will be quite warm enough to start the seeds. The young plants should be pricked off, when large enough to handle, 2 in. apart, and placed in the same temperature again, keeping them shaded for a few days, but moving them to a light position near the glass as soon as the roots have fairly grasped the soil and feel at home in it. When fit to transfer to single pots, a frame should be arranged for them in some open situation, with 4 in. of coal ashes in the bottom to set the pots on, and to keep out worms. The frame should be kept close for a few days, and then have ventilation, increasing in amount as the season advances. The plants should stand thinly, so that their crowns or whorls of foliage may have room for development, and be potted on as they require it, giving the last shift to the early-blooming plants about the end of August, and the late ones in September. It is best not to over-pot, as large plants can be grown in 6 in. pots. A mixture of loam and peat or leaf-mould suits them well, with a sprinkling of sand or charcoal dust to insure porosity. A larger proportion of loam may be used in the last shift than in previous ones, but it must be fibry, and simply broken up, not sifted. The watering must be carefully done, especially for a few days after being transferred to fresh pots. The plants may be left in the cold frame till October, when they should be taken to a greenhouse; and the flowers will be finer if a little fire-heat be used to keep the air in circulation, and to permit of the free admission of fresh air when not absolutely freezing or very windy. In a low temperature in winter damp is apt to lodge on them, which induces decay about the crown, often damaging the flower-spikes and foliage. Late-sown plants are best to save seeds from, and the best flowers only should be selected. A light position in a cool, dry house will be best for seed purposes, and a camel's-hair pencil should be used daily when the pollen is dry. The best strains are, as a rule, the least prolific seed producers.—E. HODGKIN.

NOTES FROM KEW.

Hardy Plants.—Owing to the late severe weather there is a general dearth amongst hardy flowers compared with the corresponding week last year. The only plant attractive here is the charming little *Milla Leichtlini*, which is both new and rare. Its flowers are just peeping above the soil from a rosette of narrow leaves. They are about the size of those of the better known one-flowered *Milla* (*M. uniflora*), but white, with faint, radiating, green streaks; and they are, moreover, delightfully fragrant. It is found at high elevations on the Andes. A few kinds of *Crocuses* are yet in flower, notably the deep orange-coloured *C. vitellinus*, a native of Syria, which is pre-eminently the best of all the winter-flowering kinds. It has been continuously in flower for several weeks, even striving to push its way through a covering of snow. *C. syriacus* much resembles it, but differs in having the outside of the flowers striped more or less distinctly with black. Though known as long ago as the days of Dean Herbert, these are as yet very rare in gardens. Another fine kind is a form of *C. Boryi*, named *lavigatus*, which differs from the type in the flower being suffused with purple, and being feathered on the outside with black. It is a native of South East Europe. *C. Schimperii* (syn. *C. cancellatus*) is pretty, having long, white flowers with a basal zone of orange colour. *C. longiflorus* (syn. *C. odoratus*) is a better known kind, but none the less desirable as it continues to throw up its mauve-coloured blossoms for a long time during late autumn and winter. Turning to the Christmas Roses we see here that ere long a recently acquired, and, we should say, a complete collection will be a source of much interest to those who care for this class of plants. The only kinds at present in flower are *H. altifolius*, and a fine example of the ordinary kind, and also the not showy but handsome-leaved *H. foetidus*.

Greenhouse Plants.—The conservatory is now beginning to assume a somewhat gayer appearance by the introduction of the various kinds of spring, bulbous, and other forced plants. Two showy *Acanthads* are made free use of, and are well adapted for the purpose, viz., the old *Justicia speciosa*, a profuse flowering kind, with violet-coloured blossoms, and *Sericogriphus Ghiesbreghtiana*, a plant with peculiarly-mottled stems terminated by a one-sided raceme of long, tubular, scarlet blossoms. *Senecio Ghiesbreghtiana*, is a handsome Groundsel with large, coarsely-toothed leaves, and dense clusters of bright orange flower heads. In one of the *Camellia* beds is a finely-flowered specimen of the lovely Nepalese shrub, *Luculia gratissima*. It would be difficult to conceive a more desirable winter-flowering plant than this when seen covered with large clusters of delicate pink blossoms, which yield a delicious perfume. It is, moreover, very easy to manage in a cool, airy house, though difficult to propagate. Another old favourite is *Leschenaultia formosa* from New Holland. *Cestrum aurantiacum*, an old introduction from Guatemala, deserves more extended cultivation than it receives, as it is one of the most useful greenhouse plants we have, and is specially adapted for training to rafters or pillars. It is an evergreen with long terminal racemes of rich orange blossoms, tubular, and about 1 in. long, flowering from October till February. In the central bed is a remarkable Australian Protea (*Banksia collina*), bearing numerous dense cones of curious, brownish-coloured flowers. The winter garden, too, will soon be enlivened by an almost endless variety of winter-flowering *Acacias*, and a host of other Australian plants. The only kind at present which attracts attention is the old *A. platyptera* from Swan River, with its curious flat stems, which do the service of leaves. *Coprosma lucida*, a large evergreen shrub from New Zealand, now forms a very interesting object, the stems and branches being thickly covered with small reddish-orange-coloured berries.

Stove Plants.—In the T range the first plant which claims attention is *Erythrotis Beldomei*, which makes a pretty basket plant with slender stems covered with silky brown hairs, and small daisy-arranged leaves, hairy and green above, dark purple beneath. The flowers are borne at the tips in clusters, the petals being pale violet, the very hairy stamens blue tipped with yellow anthers. It belongs to the Spiderwort family, and is found on dry, bare rocks, at 3,000 to 4,000 ft. elevation, on the Myhendra Mountains of South Travancor. *Jatropha podagrica*, a native of New Granada, is of quaint aspect, with large gony stems and crooked leafless branches terminated by a cluster of small scarlet blossoms with golden stamens. *Apheleandra nitens*, from Guayaquil, and *aurantiacea*, from Mexico, must be placed as front rank species of a showy genus. Both are strikingly similar in form and colour of the flowers, which are of a dazzling scarlet borne on erect spikes, but the former differs by its shining, bronzy leaves, whilst those of the latter are variegated with silvery markings. Behind these a comparatively small specimen of that most graceful of all Palms, *Cocos Weddelliana*, is flowering freely; though rather inconspicuous, and not of uncommon occurrence, we take the opportunity to advocate its claim to more ex-

tended cultivation as a decorative plant of the highest order, more especially for indoor table adornment, as it is of easy culture, and retains its small state for some years. *Rondeletia Backhouseana* is a large winter-flowering shrub of rather coarse habit, bearing large, terminal clusters of tubular, bluish-coloured blossoms. It is a native of Tropical America. In the adjoining compartment Begonias are abundant, and, as most people are always on the outlook for desirable winter-flowering plants, the following selection may be relied on as answering the purpose satisfactorily. The well-known *B. nitida*, with bluish-coloured flowers, and a kind named here as a near ally to it, are robust and very free-flowering; *B. falcifolia* has flowers of darker hue and spotted leaves; *B. semperflorens*, odorata, and *suaveolens*, pure white; *B. incarnata*, and *Lapeyrolae* with pinkish-coloured blossoms. *Crotopogon Luyanus* is not nearly so well known as it deserves; though of straggling habit with long, pointed, finely-toothed leaves, the upper third of the stems produces in continuous succession numbers of its long, curved, tubular blossoms of a delicate rose colour very useful for cutting purposes. It is also very interesting as being one of the few generic hybrids in cultivation, it being a cross between *Siphocampylus betuleifolius* and *Crotopogon fastuosus*. It was raised at Marseilles about twenty years ago. *Linum trigynum*, a native of the East Indies, though it has been in gardens for well-nigh a century, is also too little known, for few plants can surpass it when covered with its large silver-shaped golden blossoms, as we see it here. The white variety of *Poinsettia* is sold here with good effect, the cream-coloured flower-leaves associating admirably, and toning down as it were its brilliant scarlet congeners. In the Cactus house several kinds of Aloe are flowering, viz., *A. picatilatis*, with curiously-arranged leaves in a fan-like manner; *A. scottiana* arborescens and pluriens, all very similar in form and colour of flowers, which is of a reddish-orange, and very handsome. Overhead, trained to a rafter, is a climbing kind, *A. ciliaris*, with flowers resembling the others, and tipped with green; they are all natives of the Cape. *Agave schidigera* is a very remarkable plant, with the edges of its sword-like leaves beset with short, curly, silvery threads. Its flower spikes rise over 5 ft., on which are thickly arranged, greenish-coloured blossoms, with six long, dull purple stamens. One or two succulent plants illustrative of the arid region of Mexico are flowering freely, viz., *Cotyledon fulgens* and *retusa*, both with very glaucous stems and oblong leaves and terminal clusters of orange-scarlet blossoms of thick texture and very ornamental. W.

NOTES OF THE WEEK

Scented-leaved Pelargoniums in Hanging Baskets.—These form, at the present time, a striking feature in the Crystal Palace at Sydenham. The plants are growing in large wire baskets suspended from the roof, and are allowed to droop naturally and gracefully all round the baskets. Being kept free from dead leaves, they thrive luxuriantly, and, on account of their elegant, deeply-cut foliage and sweet scent, they rank among the best of basket plants for winter decoration.

Ornithogelum thyrsoides.—This is now producing, in Mr. Ware's nursery at Tottenham, fine spikes of pure white blossoms, which at this time of the year are valuable for many purposes. It thrives well in pots in any moderately warm house, and would make a good plant for forcing into bloom at Christmas, a time when good white flowers are valuable.

Genetilis Hookeri.—In the large collection of hard-wooded plants in the Victoria Nursery, Holloway, none are more attractive at the present time than large specimens of this *Genetilis*. It flowers earlier than *G. tulipifera*, and is more showy and easier to cultivate. It lasts in flower for several months in succession, and its bright red, bell-shaped blossoms are shown off to good advantage among white Cyclamens, white-flowered Jasmines, and similar plants used at this season of the year for conservatory decoration.

Moss-clad Tree Ferns.—Bare stumps of Tree Ferns, in Mr. Day's garden at Tottenham, are effectively clothed with *Selaginella denticulata*. It is planted in the soil round the bases of the Ferns, and encouraged to grow round them, which it does rapidly, provided the stems of the Ferns are kept constantly moist.

Romulea Macowani.—My pits, in which was a collection of the rarer kinds of bulbs, had been snowed up for a fortnight, so that I could neither admit light nor air; and after the severe frost a thaw set in, rapidly melting the snow and ice, and opening the frames I was agreeably surprised to perceive large flower buds on *Romulea Macowani*. They are brownish-crimson when closed, resembling, in that respect, those of the brown-striped yellow Crocuses. On the first sunny day they opened, and showed a bright yellow star-shaped

flower as large as a half-crown piece, the cup being a little darker in colour than the rest of the flower. I am led to suppose that the plant will be quite hardy, and although, when without protection, it may not flower quite so early, yet it must be classed amongst our earliest spring-flowering plants, and it is one which will be greatly appreciated. Iris *Histrio*, close by, will not be in flower for from fourteen days to three weeks yet.—MAX LEICHTLIN, *Baden Baden*.

Barkeria Skinneri.—This is becoming a scarce plant even in nurseries, a circumstance to be regretted, for when well grown and flowered, as we find it in Mr. Day's garden at Tottenham, it is one of the most attractive of winter-blooming Orchids. Its flowers, being of a rich violet or purple colour, form a striking contrast to the pure waxy blossoms of *Odontoglossum Alexandrae*, of which there is now a good display in the garden in question.

Freesia refracta alba.—This is an excellent plant for the decoration of conservatories at this dull season of the year, and it is also well worth cultivating for the sake of its flowers in a cut state, for, being white and sweetly scented, they are useful in bouquets or other floral decorations. It is a plant that is easily cultivated, and one which will thrive in a cool frame or greenhouse. It may now be seen in good condition in Mr. Ware's nursery at Tottenham, some plants of it bearing numerous graceful spikes, each of which is furnished with from seven to eight flowers and buds. The flowers also possess the desirable property of lasting for a long time in perfection after being cut.

Orchids at Holloway.—At this season of the year when flowers are in most demand but comparatively scarce, a good display of Orchids, such as may be found in Mr. Williams' nursery at Holloway, is doubly valuable. Among other attractive kinds are banks of *Calanthes*, *Oncidium biflorum*, furnished with gracefully arching spikes of golden-yellow, orange-tinted blossoms, fine varieties of *Lycaste Skinneri*, the brilliant *Sophronitis grandiflora*, *Odontoglossum Cervantesi majus*, the graceful sweet-scented *Oncidium cheirophyllum*, and the chocolate-flowered *O. nevadense*. To these may be added well-flowered examples of *Angraecum sesquipedale*, and a variety of *Lady's-slippers*; these being associated with Ferns, Palms, &c., a fine effect is produced.

Masdevallia Tovarensis.—This is one of the best of the *Masdevallias* for winter blooming. Plants of it, even in a small state, yield large quantities of pure white blossoms which are valuable in a cut state for bouquets. We lately saw numbers of well-grown plants of it in Mr. Day's garden at Tottenham, where, associated with other Orchids of an attractive character, they were set off to advantage. This *Masdevallia* may be grown in pots, but it is much more effective when cultivated in shallow pans.

Habrothamnus elegans.—This is grown effectively in pots at Frogmore for decorative purposes. Plants of it are struck from cuttings in spring, potted into small pots, and kept indoors till the weather becomes mild, when they are planted out in the open ground for the summer. Their shoots are stopped several times during the growing season, and in autumn the plants are lifted and potted in 6-in. pots, and placed in the greenhouse, where they become bushy and handsome, and bear a truss of blossom at the end of every shoot, causing the latter to arch in a graceful manner. Such plants are now coming into flower at Frogmore, where they are much prized for placing in vases and in rooms, or in the conservatory.

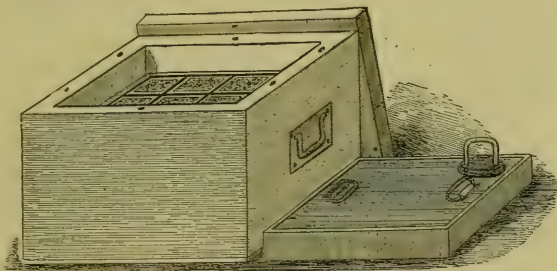
Salvias at Frogmore.—These are largely grown here for supplying cut blooms in winter, and also for furnishing specimens for antique vases in Windsor Castle, a purpose for which few other plants are so well adapted. They are struck from cuttings in spring, and planted out in good soil out-of-doors in June. In September they are lifted and potted, and removed indoors as soon as the severity of the weather necessitates such an operation. They are placed in empty fruit houses, or similar situations, as near the glass as is convenient, in order to keep them dwarf, and to prevent the leaves from falling off. The first to bloom is *S. splendens*; this is followed early in the new year by *S. Heeri*, and when this is nearly over in March, *S. gonzaleziana* comes into bloom, and thus a succession of useful flowering plants is maintained from November till April.

Variegated Pine Apples.—These are used for room decoration at Windsor Castle. They are raised from suckers grown in 6-in. or 8-in. pots in bottom-heat, until they are large enough for use, when they are placed on inverted pots near the glass in a slightly cool temperature. Any one possessing a Pine stove or Cucurber pit, or any place in which a bottom-heat of from 70° to 75° can be maintained, with a moist atmosphere, may grow variegated Pines in perfection, and, when well grown, no plants are more distinct in character, or more effective. They last well in rooms, and, their leaves being smooth, they can easily be cleared of dust, which is unavoidable in such positions.

THE FRUIT GARDEN.

THE REFRIGERATING FRUIT BOX.

A LIGHT, portable refrigerator, for shipping fruit and vegetables by southern growers to northern markets, has recently been invented by Mr. H. A. Duc, of South Carolina. It consists of a box of light wood, lined within with galvanised iron, a space being left between the box and lining of 1 in. or more, which is filled with charcoal or other non-conducting material. The box is provided with one or more shallow, movable ice boxes, made of galvanised iron, provided with handles, and an opening which is closed by a screw cap. The boxes are filled with broken ice, and closed so securely that no water from the melted ice can escape and injure the fruit. These ice boxes are of the same height as the fruit baskets or cups, and may be substituted for a tier of these, allowing one or more to be used, according to the requirements of the season, one, at the top, being sufficient in moderately warm weather, and as the season grows hotter one of the lower tiers of fruit may be replaced by a box. Fruit received in New York from southern points can, by means of these refrigerators, be safely re-shipped to Boston or elsewhere; the boxes being replenished with ice, it is ready for another journey. Before giving an opinion of this invention we visited several of the principal commission dealers in New York, and found that the representations of the patentee were fully confirmed by those who had tested it, two firms, dealing largely in Strawberries, stating that fruit received in this refrigerator brought, on the average, 10 cents more a quart than that shipped in the ordinary manner. An instance was cited of a shipment made from Charleston so late as May 10, in which the Strawberries received in Mr. Duc's refrigerator averaged 23 cents per quart, while those carried in the steamers' ice boxes brought but 12 cents, the difference being due solely to the superior condition of the former. The cases are made square, or longer than they are wide. The one here shown is 28 in. square by 19 in. high, and is provided with strong handles which shut down flush with the sides; the cover, shown at the rear, is double, and filled in the same as the sides; this is fastened down by screws with square heads, which are countersunk. The ice boxes, one of which is seen at the right hand, are 4 in. high, of a size to fit the interior of the case; the opening to admit the ice is about 3 in. across; the cap is screwed tight by means of an iron rod, bent as seen in the engraving; its ends fit into two holes in the cap; when not in use this handle is removed and laid upon the ice box. A case holding 72 quarts, when filled and ready for shipment, weighs about 250 lb. Though Mr. Duc has taken out a patent for the invention, he liberally allows us to say that he will permit any fruit grower to make the box for his own use without exacting a royalty for his patent.—*"American Agriculturist."*



A Refrigerating Fruit Box.

the way with a shovel, so as always to retain plenty of room in the trench. There is nothing shows the skilled workman more than little matters of this kind, keeping the trench well open when digging up or removing a large sized tree. Unless this is done, there is no chance of getting properly under the tree, and saving intact most of the roots. Indeed, unless the roots can be saved free from blemish, it would be hardly worth while taking pains to save long roots at all; but when plenty of good roots can be secured, and the transplanting is done in autumn, very few of the trees so moved will feel any the worse for it; and, if their systems were the least bit out of order, they will probably be all the better for the change. I have said large wall trees can be moved with much greater ease and certainty of doing well than untrained trees. One of the main causes of this is, they can be so easily secured from wind-waving after planting by attachment to the wall. I have no doubt in my own mind that the principal cause why large-headed trees fail in transplanting is the difficulty of securing them in their new positions so that the roots may have time to get a firm grasp of the new soil. Where the trees on the walls are all doing well, of course most people would say, leave well alone; but there are times when the removal of a large tree would in various ways be a manifest advantage. Perhaps the trees on a particular wall may have been originally too thickly planted; and, in order to give space for individual development, a re-arrangement must take place, involving the removal of some, if not all of them. Or a tree occupying a prominent position may become weakly, or be worn out, and trees are like

men, some wear out faster and earlier than others, and their removal becomes necessary; and if by a rearrangement of the others the blanks can be profitably filled, it is always well to do so, although of course the labour involved will be very much more than just merely planting a young tree would be. But a man who takes a pride in keeping his walls well filled up, unless his hands are needlessly tied, will generally so arrange his work that the labour and time

are forthcoming. It often happens that a tree showing symptoms of weakness, the first signs of which are easily detected by the watchful eye, will on removal to a fresh site be restored to health and fruitfulness. I know, in my young days, there was never an autumn passed without the walls being looked over and the trees put right. From my experience then and since, I know the system to be a good one if rightly carried out. But the earlier it is done the better; indeed, it would be imprudent to delay it much after Christmas. The roots should be carefully arranged, first cutting out all damaged or mutilated portions, making the cut as nearly straight across as possible. When a long cut is made, the descending sap will not be arrested till it reaches the lowest extremity of the wounded surface, and the callus will be formed there, and roots protrude, long before the upper part is healed. But if the cut be made straight across, the wound will heal at once, and be covered with a new growth, and tufts of new roots will soon be emitted. I have generally found a sharp pair of pruning scissors answer well for this work, as they cut straight across, and so far as my experience goes, do not seriously injure the bark. It is a common practice in tree planting, to lay the roots all out straight in one layer; but with large trees, that have been, perhaps, once or twice lifted previously, and where the roots are numerous, they will be far better if distributed more equally in the soil. The lower tier of roots should be spread out first, and covered with good mellow soil, and then another layer regularly disposed, and so on till the work is completed. Even where the soil is suitable and in good order, it will be very beneficial to add a few barrowfuls of fresh, mellow, turfy

TRANSPLANTING LARGE-SIZED WALL TREES

WALL trees of large size are easy to move compared with other trees not so circumstanced. It is an easy matter to untie or unnaill a tree from the wall; to carefully secure its branches with strong, soft matting, so that they cannot chafe or injure each other by friction during the process of removal; and then, when the branches are made safe, to commence far enough away from the trunk, 6 ft. or 8 ft., according to the size of the tree. Dig a deep trench, so as to get beneath the roots, and then gradually work upwards to the trunk of the tree with the fork, picking out the soil carefully, and working it back out of

soil round the roots, to give them a quick start. The trees should only be loosely secured to the wall for the present, as time must be allowed for settlement before they are finally trained. I don't think it a good plan to plant too near the wall; the base should be allowed plenty of room to increase in size. It is common enough to see trees almost bursting from the wall by the swelling of the trunk at the base, through being planted too near the wall. Before planting, the bottom of the hole should be made quite firm, and have a very slight fall to the front; but it need not be much, as the roots are always ready enough to acquire a downward tendency. By covering the roots with good mellow soil, no harm will be done by applying a little pressure with the feet before the levelling is finished, and the surface should be well mulched with half-rotten manure. It is a good plan to have a few young trees coming on, to fill up any vacancy that may occur at any time. If there should be no vacant places on any of the walls, where a young tree or shrub may be progressing till they are required, they will do very well trained to stakes in any vacant spot in the garden. It is far better to do this than to have to run to a nursery and take the chance with others, when trees are wanted. By buying a few "maidens" occasionally, plenty of good trees might always be ready when wanted.

E. HOBDAY.

OUR SUPPLY OF APPLES AND PEARS.

It is the opinion of some, that the production of Apples and Pears in the United Kingdom has ceased to be a matter of much importance, now that the Americans can pour these fruits into our markets and shops so speedily and in such large quantities. Fruit is now sent on to us some seven or eight thousand miles across the Rocky Mountains, and three thousand miles by sea, in good quality and condition, in a comparatively few days; and that certainly may be ranked among the facts that are stranger than ever fiction anticipated. Our French neighbours also cultivate these fruits to make up the deficiency of our home produce. It is well that these sources can be looked to for a supply of wholesome fruits, which in the case of Apples can be purchased at a rate that enables the frugal peasant and artisan to enjoy their tarts and puddings. The question, however arises, Ought we to be so dependent on foreign sources for a full supply of these fruits? This, like every other question, has doubtless two sides to be looked at; but our object at present is not to discuss it in the abstract. Our conviction is, however, that our home production might be much more satisfactory than it at present is, even in spite of many adverse circumstances. Some have assumed and tried to prove that the climate of this country has changed so much for the worse that Apple crops are not now what they formerly were. This we believe to be an assumption that has no foundation either in statistics or anything else, and is repudiated by the recognised fact that drainage and high cultivation have had rather a beneficial influence on our climate. Be that as it may, we have no more doubt that many districts in the United Kingdom could be made much more productive of these fruits without entrenching on lands remunerative in other ways, than we have of our own existence. The question may be asked, By what means? Of course, to begin with, by planting more trees. This may be met with the assertion that there never were so many trees raised and planted as there are in these times—a statement that may be true. But is it not near the truth that much of the planting might as well be left undone, and many of the trees might as well be burned, for any share they have in increasing the supply of fruit. We must of course endeavour to give reasons for this last assumption, as it may be termed. In the first place, we have never yet had to do with Apple and Pear trees in any district, without having the fact, that the supply of fruits in five years out of six has been borne by a comparatively few sorts, very forcibly illustrated. This observation is not by any means singular to any cultivator; and we believe if it were more carefully considered, and only those productive varieties planted all but exclusively, the bulk of fruit produced in a great number of localities would be increased fiftyfold. As an instance of this fact, we now practice it in one of the very worst spots that could be chosen for hardy fruit on a clayey subsoil, a low damp valley close to a river, with a heavy soil on a clayey subsoil, and an average rainfall of fifty inches, and where spring frosts are very prevalent. Yet only twice in ten years has the yield of Apples not been sufficient for the supply of one of the largest establishments for three months, and from comparatively few trees—under what we consider adverse circumstances—in the vegetable garden alone. We are now so well acquainted with the few varieties and trees that are productive, that we could venture to point out those that are likely to be fruitful the following season; and the varieties could be more than counted on our fingers. If every tree in

gardens were of these varieties, there would be supply enough for eight or nine months of the year. The blossom produced by other varieties is most encouraging, but their crop is almost always *nil*. Is it therefore not reasonable to expect, that if those varieties that bear thus were largely planted in this and similar districts, the produce would be much increased with the self-made labour in culture? The same rule we have noticed to apply more or less to other districts. The indiscriminate planting of kinds not suited to localities has been found out by market-growers to be a great mistake, and they are now acting on the principle of selection.

Another practice, and, considering its results, one that has been adhered to with an amount of tenacity that is remarkable, is that of planting Apples and Pears by the sides of walks, in what are termed cross-borders, in kitchen-gardens, and even dotting them about in vegetable quarters—the spaces of ground between trees in these positions being frequently occupied with biennial and other flowering plants, and sometimes with Strawberries and vegetable crops. These borders, if devoted to flowers, are rarely properly manured, and are deeply worked with a spade annually among the plants, and close up to, if not over, the roots of the trees. If devoted to vegetables, they are, on the other hand, heavily manured and deeply dug. To escape mutilation, the roots of the trees, with a sort of self-preserving instinct, proceed to find peace and comfort in a too often unsuitable and canker-breeding subsoil. In the one case the roots are starved, and in the other too grossly fed; and the respective results are stunted growth and poverty-stricken produce in the one case, and in the other too gross a growth of unfruitful wood, to be annually and ruthlessly cut away with the pruning-knife. Of these two evils it would be difficult to say which is the worst or most unreasonable. Trees in such positions as the one named must of necessity be kept in very restricted limits as to size, or injury to the plants among which they stand would be greater than it really is; and even with all the restriction practised, the one crop is most injurious to the other. To make matters bearable, the pinching and pruning are carried to an injurious excess every year, leaving as many knife-wounds as make it a wonder that decrepitude, canker, and decay are not still more frequent. The pruning of such trees, after the fashion of the present day, is an evil; and it is to be feared that in not a few cases it is resorted to to permit of the other evil of making room for growing every conceivable variety in a given space. Root-pruning every two or three years is perhaps the more reasonable course to pursue; but if trees are to be grown with a vigour capable of bearing a full crop of good fruit, it is a process that can only be carried to a certain extent, and that not sufficient to do away, under the circumstances, with the murderous pruning which leaves trees more conspicuous for their number of knife-wounds than for anything else.

This miniature-tree system, mixed up with other crops, is, generally speaking, not satisfactory. It is injurious to other kitchen-garden crops, and leads to so much cutting and restriction, that it never will admit of a satisfactory supply of fruit, even if the selection of sorts be ever so suited to the locality. In so important a horticultural matter as this, it is strange that we adhere so tenaciously to the mixing of fruits with other crops; and the evil is most flagrant in what are termed the best of gardens; and hence the faithfulness with which it has been copied. For those with only one small piece of ground there is some excuse if they desire a few varieties. But even in their case the trees would do better located by themselves.

There is no serious reason that we know of why there is so much of this mixing up of standard fruit-trees with kitchen-garden produce, instead of putting them by themselves, where they and the ground can be much more specially treated in accordance with their wants. By doing so, many telling advantages are gained for both departments. The evils of digging in heavy dressings of rank manure, and of mutilating the roots of the trees, find no excuse, and can be entirely avoided. Neither need the trees be starved or injured by being improperly fed when they want extra nourishment. No spade or fork should be thrust among the roots of trees to dig in manure. A firm surface, subject to no more tillage than what will keep it clean, having the necessary manure spread on, inducing the roots to keep near it and be fed with the beneficial elements of, instead of coming in contact with, the manure—this way of managing the soil produces a more moderate growth, and altogether that state of health without grossness which is so desirable.

Then the trees, to be worth the name, can have room and liberty to develop without injury to other crops and with benefit to themselves. The pruning is reduced to a minimum sufficient to admit light and air to the various parts of each tree, instead of the stag's-horn style of pruning off almost every inch of wood made annually. The compromise between nature and art mutually working into each other's hands results in the building up of trees that frequently do more to fill fruit-rooms with fine fruit than when they are managed on the other principle which we are contrasting.

THE FLOWER GARDEN.

STEM ROOTS ON LILIES.

ON Dec. 21 (pp. 560, 561, and 562, Vol. XIV.), four columns were taken up by no fewer than six opponents, all writing in strong terms against my remarks on the subject of stem roots. With respect to their letters they are, on some important points, so inconsistent one with another, that it would be impossible to enter into anything like an intelligible or profitable argument on the subject. With regard, however, to them all, taken collectively, it is fortunate for me that "E. H. W.'s" important and opportune letter appeared on the same day (p. 560), as what he says may be taken as a comprehensive and conclusive reply. He tells us that he has recently visited Japan, and communicates to us some interesting "information about the habitat and growth of *L. auratum* in its native country." Among other things he says:—"The drying up of the sap in the scales and consequent exhaustion of the bulb's vital power is the real cause of the 'mop-like growth of stem roots' so often seen in late-potted bulbs that have been recently imported." He says further:—"Stem roots do not strengthen the bulb to any appreciable extent in storing up strength for another season, for on being taken up it is found to have dwindled to a mere nothing." This is strong confirmation of what I have said over and over again, and to "London Stone" so lately as Dec. 7 (p. 503). "E. H. W." also says:—"On healthy plants of *Lilium auratum* in their own country stem roots are present only to a moderate degree." In this country we would say the same of *L. bulbiferum* and the like, without further notice, simply because we do not make the stem roots of that Lily a nuisance by improper cultivation. Again, "E. H. W." says:—"It will never be found that a really healthy bulb of *L. auratum*, provided with abundant roots of its own, pushes stem roots in any quantity." Now, the reader cannot but see that this information has been communicated to us by "E. H. W." without the slightest bias one way or the other. What, then, have my opponents said of me, because I have endeavoured to explain to the readers of THE GARDEN substantiated facts which spoke clearly to the same effect? "F. W. B." says: "I totally disagree with 'Dunedin' with regard to stem roots and their functions." He says more, but that will require a specific reply. "A. S. O. N." says: "If stem roots, when they occur in Lilies, do not assist in nourishing the flowers, what do they nourish?" Mr. T. Smith says: "I shall require better argument than any 'Dunedin' has yet adduced before I commence to cut off the stem roots. If they are useless, why are they produced?" "E. B." says: "Will he ('Dunedin') have us believe that Nature throws out stem roots, not only without any good purpose to serve, but for no purpose at all?" Mr. Baines says so much, that it must stand over for another occasion. "London Stone" says: "I can only repeat that 'Dunedin's' positive statement of the evil effects of stem roots is mere theory." Now any reader may easily see that these questions and remarks should not have been addressed to me at all, for the simple reason that "E. H. W.'s" letter shows clearly that they should have been addressed to those who, by their injudicious advice, and misdirected culture, encourage the growth of stem roots, to the ruin of the new bulbs. Even the Japanese themselves, from whom we have borrowed erroneous ideas, are now, according to "E. H. W.'s" letter, "thirsting for change and improvement, even greater than in Europe." It will, therefore, be indeed a great disgrace to us if we, for the sake of preconceived notions, allow them to go before us; for they are, I hear, throwing off the incubus called "The Perennial Theory." But I am doing injustice to "E. H. W." himself, by not at once referring my opponents to his letter, and begging them to read it with care and consideration. If they do so, they will see that what they have written in favour of stem roots is very much calculated to injure the culture of the Lily. DUNEDIN.

Wild Plants for the Flower Garden.—Allow me to thank Miss Hope for the information which she has given (p. 539, Vol. XIV.) respecting hardy British and other plants suitable for the flower

Besides, trees in an orchard give an amount of shelter to each other that is an important factor in securing comparative safety from the blighting influence of winds, which do so much damage to the blossom. By observing these few cardinal points more generally—the proper selection of sorts, the orchard system of planting, natural root-culture, and less pruning—much more and better fruit would be produced in a great many districts. The culture would be simplified and the labour lessened. On the other hand, the vegetable-garden would also profit by such an arrangement to no inconsiderable extent. This, coupled with the planting of many a nook of ground now not much better than waste, would very much increase our home supplies, as compared to what is grown in gardens, making us more independent of foreign supplies of at least the commonest, though not the least useful, of these fruits, which it is desirable to make still more plentiful, cheap, and popular among our toiling millions.—"The Gardener."

THE VARIETIES OF DAMSONS.

The Damson is one of the most popular and widely cultivated of English fruits. Many hundreds of acres of land in certain districts of the country are devoted to its cultivation, but it is in our cottage homes, and in labourers' gardens, that the Damson is most prized, the crop of this fruit being looked upon as security for the rent. The Damson is a true English fruit. It is not found in cultivation on the Continent, or elsewhere, excepting America, where it has probably been introduced from this country. Of Damsons there are several varieties, all originating from the wild Plum, *Prunus institia*.

English Damson.—This is the most common variety, and is sometimes called the Round Damson, Common Damson, Black Damson, &c. The fruits are small, roundish-ovate; the skin deep purple, or nearly black, with a fine bloom. Flesh greenish-yellow, acid, almost as austere as a Sloe until quite ripe. It ripens early, and is a great cropper.

Shropshire Damson, or Long Damson, Frune Damson, &c.—The fruits of this are much larger and longer than those of the common English Damson. It is of a long ovate shape, tapering mostly to the stalk; the skin thick; flesh thick, adhering somewhat to the stone. This is a variety of excellent quality, and the best for making preserves, but it is not such a prolific bearer as the common.

American Damson.—With this variety we have not much personal acquaintance, having only fruited it one season. The fruits are large and round, the skin dark purple, and slightly spotted with brown. Flesh greenish-yellow, adhering to the stone, juicy, melting, and sweetly flavoured. Mr. Scott, in his "Orchardist," says it is synonymous with Frost Gage and Frost Plum, and "is a Plum in much repute in New York market." It is rather a shy bearer.

Crittenden's Prolific and Rochester Damsons are varieties of great repute in Kent, being of a large size, and very prolific.—"Florist."

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Outside Vine Planting v. Inside.—I have two late Vineries chiefly planted with Alicante, Lady Downes, and Trebbiano. In one of them the roots are outside, while those of the other are inside. In the former I observe that the Alicante keep plumper than they do on the Vines planted inside; they are just now (Jan. 4) plump and good, while in the latter case they are shrivelling. I have this day tasted both, and I find the shrivelled ones the best as regards flavour. I shall bottle some of each and see which does best.—R. GILBERT.

Late Grapes.—It is well that all Grapes should now be removed from the Vines if possible, as reaction will soon take place should the weather become mild, and, if pruning be delayed, bleeding will be the result. Lady Downes should be cut first and put in the Grape room, and if that structure be too small to accommodate Black Alicante, Muscats, &c., these may be left on the Vines for present use.—S.

King of the Pippins Apple.—This is the best Apple which we possess; it never fails to produce a crop. In the very worst of seasons it bears moderately well, and in good seasons abundantly. It is handsome in shape, good in colour, first-rate in flavour, keeps until spring is far advanced, and is equally good for dessert or cooking.—CAMBRIAN.

Concerning Fruit Culture.—The public roads of the late kingdom (now province) of Hanover are nearly all planted with Apple trees. The guardians of the roads are instructed, and take interest in their trees. They guard the fruit till ripe, when the trees are sold singly by public auction and the proprietor has to guard them and take the fruit down without damaging the trees. The money goes to the direction (office) of the public road. These trees give shelter, ornament, and fruit. To plant trees along railways has not been found practicable, by reason of the telegraph wires, &c. In the kingdom of Wurttemberg (capital, Stuttgart) much has been done in this respect, and proposals have been made to plant the side of the railways, but I do not know with what result.—ALFRED VON SEEFELD, in "Dietetic Reformer."

garden. Although *Valeriana Phu aurea* cannot be classed as a British plant, it does not seem to be very widely different from the common species known as *V. officinalis*, as Hooker, in his "British Flora," intimates that there is considerable affinity between them, it is possible that if the latter assumes a golden dress it would be equally valuable. Miss Hope's remarks on *Mesem Athamanticum* are also just and true. I have met with it on the dry sandy banks about a mile from the coast in a very robust form. For many years I used to cultivate the *Helleborus foetidus*, and thought it bore no inconsiderable resemblance to an Eastern Palm; moreover, it was a very convenient plant, and withstood winds and severe weather in an exposed place better than any other plant with which I am acquainted. Could some one impart a silver or golden hue to its foliage it would be a grand plant. There is also a British *Euphorbia* of handsome growth; I am not certain of its specific name, but it is known in some country districts as Jacob's Ladder. The leaves on its stems intersect each other at right angles with mathematical regularity. I have never done more with it than encourage its growth amongst shrubs, but it might be advantageously employed elsewhere. Another class of plants might also be brought into requisition perhaps, and that is the *Equisetum* or Mare's-tails; sometimes we meet with them in bouquets of flowers, and the singularity of their growth is at all times pleasing. Could one of these be induced to put on a yellow livery it would be received as a boon. Other wild plants, equally beautiful, might also be found. Some years ago an *Oxalis*, I think of wild origin, was admired by some, its foliage being of a bronzy-red colour, and *Ajuga reptans rubra* is assuredly also of British origin, and both plants had their admirers. Am I not right in supposing the Golden Pyrethrum of the present day also to be the offspring of a plant common in our woods?—A RETIRED GARDENER.

STOBÆA PURPUREA.

MR. HEMSLEY in his description of this plant last week (p. 12) says, "to grow it in perfection in the open air, some little attention is required as it is not perfectly hardy." Surely this must be a mistake. In February my first seedlings made their appearance, and as soon as they were strong enough to handle, they were pricked off into 5-in. pots. In these they grew rapidly, soon filling the pots with roots, and compelling me to have them potted off sooner than I had intended. The strongest were potted in 3-in. pots, the smallest in "stores," in which they remained until the latter end of April, when they were planted in the open ground; they were dibbled in in the same way as one would do Cabbage plants, merely shading them for a few days, and I do not think that I lost one in a hundred. They grew rapidly, and by the end of June they began to throw up their flower-spikes; these were at least 3 ft. in height and bore on an average twenty-five blossoms on each; they flowered beautifully and were the admiration of everyone, lasting in good condition for a month or six weeks. I gathered from them a good supply of seed and then left them to take their chance. During the whole of the first frost all the plants, both in pots and in the open ground, were unprotected, the pots being not even plunged. After the frost had gone I examined them and found them breaking up strongly from the bottom, some having three, four, and even six crowns. I then thought it prudent to remove them in case of more frost, so the pot plants were placed in a cold frame and those in the ground were covered with straw. I have examined them again to-day, and I find them, both in pots and in the ground, uninjured. Any plant that will stand the test of such a winter as we have had and are still having, in such an unfavourable locality as that of Tottenham, must, I think, be perfectly hardy anywhere in this country. A. P.

CANNAS ON THE CONTINENT.

I HAVE read Mr. Cornhill's remarks on Cannas with much interest; having considerable experience in their growth, I have no hesitation in saying that his instructions as to their treatment and propagation are correct. It is important that the soil in which Cannas are grown should be deeply moved, at least two spades or more, for although the roots do not go very deep, they require the soil to be light and well drained, notwithstanding their liking for plenty of moisture. It has been often stated that Cannas cannot be cultivated for several years in the same soil, but that is a mistake. I have grown them for many years in the same place at the bottom of my garden, shaded by trees, and protected from wind. They grow with me most luxuriantly. As to wintering them, it is, as Mr. Cornhill writes, exceedingly easy, provided they are protected against frost. I am not, however, partial to shaking off the earth from the roots. I have tried it, but have found that when I left the whole of the earth amongst and outside the roots, they were stronger the next year.

In November, before frost is probable, I lift them with the spade, and put them under the shelves of the greenhouse, and there, when they appear dry, give them a slight watering to keep them moist. I tried to leave them the year before last in the ground, being laid up in November by illness, and not confiding the treatment of my plants to any one, but, as the winter was very damp, they were all rotten next spring. I think it, therefore, advisable to lift them, to preserve them from too much moisture and frost. As to the varieties named by Mr. John Cornhill, I must answer his appeal by giving your readers the names of a few of the best, and I will give them according to their height:—Bariletti, the best of all as to foliage, seldom blooms from 8 ft. to 9 ft.; Auguste Ferrier, foliage also beautiful, from 7 ft. to 8 ft.; nigricans, brown foliage, 7 ft. to 8 ft.; Imperator, green foliage, 5 ft. to 8 ft.; Jacques Plantier, green foliage, 6 ft. to 7 ft.; insignis, green with brown, 6 ft.; Dûpôt Henon, green foliage, 5 ft. to 6 ft.; Maréchal Vaillant, brown and green, 5 ft. to 6 ft.; Daniel Hooibrank, green foliage, 5 ft. to 6 ft.; Premice de Nice, green foliage, 5 ft. to 6 ft., one of the best for blooming; Jean Bart, brown and green foliage, about 5 ft.; Jean Vandaal, brown with green foliage, 4 ft. to 5 ft.; Elouard Morren, green foliage, large yellow flowers, spotted with dark orange, 4 ft. to 5 ft.; Bihorelli, green foliage, free bloomer, 3 ft. to 4 ft.; Pietratta Nana, green foliage, very free bloomer, 2 ft. to 3 ft. It must not be forgotten, that the mulching recommended by Mr. Cornhill is not sufficient, and that Cannas, to come to perfection, require frequent watering with liquid manure, and what they like best is nightsoil, deodorised by means of sulphate of iron.

Ljons.

JEAN SISLEY.

PLATE CLIX.

RHODODENDRON LEPIDOTUM.

RHODODENDRONS, or "Rose trees," are scattered all round the northern hemisphere, but the greatest concentration of species occurs in the Himalaya mountains, the home of the present species. Here they form a characteristic feature of the woody vegetation in certain localities, and especially at great elevations. They vary from a few inches high, as *R. nivale*, to 40 ft., with a trunk sometimes exceeding 14 ft. in girth, as *R. arboreum*. The former is found almost at the extreme upper limits of vegetation of flowering plants, at least, having been collected by Sir J. D. Hooker at an elevation of 18,000 ft. *R. lepidotum*, although it does not ascend to quite so great an altitude, is an Alpine species, occurring between 8000 ft. and 16,000 ft., according to the nature of the locality, but it is most at home between 10,000 ft. and 15,000 ft. above the sea level. Having so great a vertical range, it naturally varies considerably in stature, in the size of the leaves, and in other minor details. The forms *R. salignum*, *R. obvatum*, and *R. elegans*, originally published as distinct species, have proved to be no more than varieties of one type. Each of these varieties, which are distinguished in the extreme states from each other mainly by differences in the foliage, varies in the colour of its flowers from yellow and pink through divers shades to dark purple. In all its numerous forms this species is characterised by having the upper surface of the leaves, as well as the lower, and the flower stalks, clothed with circular brown scales. It is also highly resinous, emitting a powerful odour under the influence of sunshine. In its upper habitats it is of a gregarious nature, growing 1 ft. or 2 ft. high, and extending laterally into large clumps. Lower down in the mountains it attains a height of 4 ft. or 5 ft., but is of somewhat straggling habit, with naked, twisted, and crooked trunks and branches, terminating in tufts of slender branchlets. The leaves are clustered near the tips of the branchlets, and rising above the foliage are from one to four flowers. Several of the varieties mentioned above have been introduced into our gardens, as well as one called *chloranthum*, with pale yellowish-green flowers.

W. B. HEMSLEY.

[The plant from which the annexed figure was prepared was supplied from the Lawson Company's Nurseries, Edinburgh, where it is found to be perfectly hardy. It is a very free bloomer, having flowered in the nursery in question in a very small state, and most of the plants now in the open ground have plenty of flower buds on them. The severe frost which we have experienced this winter has apparently had no injurious effect upon them.]



AN INDIAN ALPINE RHODODENDRON. *R. LEPIDOTUM*. WALL.



GARDENING FOR THE WEEK.

Conservatory.

More pleasure, as a rule, is derivable from a well-furnished conservatory during the next three months, than at any other time of the year, inasmuch as during that period there are less attractions in the outside garden. This is especially the case where the conservatory is attached to the dwelling, and, consequently, accessible without exposure to the weather. Everything possible should now be done to keep it as attractive as possible by means of the regular introduction of forced flowers, prepared elsewhere, and the arrangement of them along with the permanent occupants of the house, in a way that will produce the best effect. Attention given to this is time well spent, for it frequently happens that with a moderate quantity of fine-leaved and flowering subjects judiciously placed, a much more artistic effect is given than in other instances where there is an unlimited quantity of material at hand, but an absence of ability to use it to the best advantage. There are few matters connected with the ordinary routine of a garden, in which those in charge have a better field for displaying ability above that of the nominal plant grower, than in that of conservatory arrangement. There is no doubt that a good deal of the effect possible to be produced, depends upon the internal construction of the building. To make anything like an effective arrangement there should be nothing in the shape of a fixed stage, as the presence of such prevents the possibility of effecting the requisite changes in the grouping, that from time to time should take place, so as to obviate the objectionable monotony of seeing a considerable number of the regular occupants of the conservatory always in the same position. During the next three months *Camellias* will play an important part in the arrangement here, especially where there is a sufficient number of plants proportionate in size to the dimensions of the house which they occupy. If these be arranged so as to act as a background to forced *Azaleas*, *Cytisus racemosus*, *Epacris*, *Correas*, hardy shrubs, *Cinerarias*, *Primulas*, forced bulbs, standard *Tree Mignonette*, *Salvias*, *Epiphyllum truncatum*, &c., in combination with *Agaves*, *Dracanas*, *Yuccas*, *Cordylines*, *Dasylirops*, *Lomatias*, *Phoridium tenax*, *Tree Ferns*, *Cycads*, and *Macrocarpas*, a collective effect may be made not easily surpassed at any season of the year. Where a good supply, in small pots, of *Lycopodium denticulatum*, *Isoetes gracilis*, and *Centaureas*, is at hand, they will be found most useful in hiding the larger pots.

Roof Climbers.—So far as these are concerned, there are few that, just at the present time, will contribute much by their display of flowers, but they should be all carefully gone over, and so far cut in as to prevent anything like crowding, or their spreading under the whole roof surfaces in a way that will too much exclude light. In securing them in their places, the objectionable practice of tying them in so tightly as to give the whole a stiff appearance should be avoided. On the contrary, a sufficient number of shoots should be left hanging in a pendant position to prevent this. Where insects of any description are troublesome, they should be thoroughly cleaned while the plants are comparatively in a dormant condition. For a like reason, and to enhance the general appearance, all the permanent occupants should, as often as time can be found, have their leaves sponged; this is the more necessary at this season when the syringe and garden engine are better not used.

Temperature and Air-giving.—The temperature of conservatories should be from 46° to 50°, in the night, according to the weather, with a proportionate rise by day; this, as a matter of course, will necessitate an almost continuous use of fire-heat, to avoid the over-drying influence of which sufficient moisture must be given in the immediate vicinity of the pipes, otherwise the air will get so dry that its effects are certain not only to be seen in causing the unexpanded buds of *Camellias* to fall off, but it will also act injuriously upon other plants. Be very careful about the admission of air, even at such times as the sun happens to shine out clear and bright, giving it, as far as possible, at the roof. Much better let the thermometer rise considerably on the few occasions that it may be expected to do so for several weeks hence than admit a volume of cold air in direct contact with the plants.

Greenhouse.

Where hard-wooded plants are only required for home decoration, and consequently there is no danger of the branches rubbing and chafing against each other when being moved the short distance they have to be conveyed from one house to another, no more stakes and ties should be used than are needful to support them in a form similar to that which each plant, according to its kind, assumes in a state of Nature. When plants are wanted for exhibition purposes they must of necessity have the requisite quantity of sticks and ties to keep their branches steady, or in transit the flowers are certain to be

destroyed. This applies not only to hard-wooded greenhouse plants that usually come under this designation, but also to *Cape Heaths* and *Azaleas*; but, in the case of the latter, such tying as they require should never be deferred till this time of the year, being much better done towards the close of summer, before the season's growth becomes solidified, as then the points of the shoots and foot-stalks of the leaves, whilst yet soft and flexible, will in a few days regain their proper position, from which, in the work of tying, they have been bent; this will never take place if the plants be left until the wood has got hard and ripe—a circumstance which adds much to unsightly formality.

Winter-flowering Heaths.—As soon as these have done blooming, they should be at once cut back, so as to cause the principal shoots to break low enough to keep them from assuming the straggling condition they will get into if left to go on for another season without the last summer's growth being sufficiently reduced.

Primulas.—Both the single and double varieties should, where possible, be kept in a light house or pit, where they can be accommodated with a night temperature of from 45° to 50°; keeping them as close to the glass as circumstances will permit. The plants of the single varieties intended for later flowering should be some degrees cooler than this, and all must be watered with care, as if the foot-stalks of the leaves get much wet they will be liable to decay.

Cyclamens.—To grow these plants well they should be treated through the winter as to temperature much in the way recommended for *Primulas*, as, unless kept a little warmer than an ordinary greenhouse, they will not grow or flower anything like what they are capable of. Keep a good look-out that there are no apophyses upon them, otherwise they get established in quantity on the young advancing bloom-stems without being noticed, in which case they will cause the flowers to come deformed.

Cinerarias.—If a sowing were made sufficiently early, and the plants have been well attended to through the season, they will naturally have come on into flower without anything above the usual greenhouse treatment, to which they should never be subjected, as even a very little heat injures them by destroying the under leaves and drawing the bloom-stems up thin and weakly, which spoils them for the general purposes of decoration, and if the flowers are wanted for cutting makes them comparatively worthless, as they flag directly. Keep the successional later-blooming plants as cool as possible, so that they are out of the reach of frost; by this means they may be had to flower in good condition up to the middle of May, during which period they will be found most useful, as they furnish shades of colour, especially blue, not only beautiful in themselves, but such as much enhance the effect produced by flowers of other colours with which they are associated, either in the conservatory or in a cut state.

Herbaceous Calceolarias.—Plants raised from seed sown last summer, and afterwards potted off singly, should at once be attended to by moving them into larger pots before their roots get at all confined, for if this occurs, the stunting influence will be such that they never afterwards can be induced to grow on freely, or to attain anything like the size and ability to produce such a quantity of flowers as when encouraged by liberal treatment. It is seldom we now see these useful decorative subjects so well managed as they are at one time were. If, as may be supposed, they are occupying 3-in. pots, a portion may be moved into others that are 4 in. or larger, in which they can be allowed to bloom. Those that are intended to have a second shift in addition to the present, may be transferred at this time to 6-in. pots. They delight in rich, light soil, such as is composed of two parts good, free, turfy loam, with a third part consisting of equal proportions of leaf-mould and rotten manure, all mixed up with sufficient sand. In potting, avoid the extremes of leaving the soil so very loose as at one time was looked upon as conducive to their well-being, and also the opposite of compressing it in the pots to that degree of solidity necessary with *Pelargoniums*. The plants should have a light position in a pit or house that can be kept at a temperature of about 40° in the night, with a moister atmosphere than many plants require.

Shrubby Calceolarias intended for flowering in pots should be similarly treated, but in practice I have found that these do better with potting somewhat harder than the herbaceous species. Both should be from time to time examined to see that they are free from green fly, as, if this pest is allowed now to get established upon them, it will spoil the appearance of the plants, will weaken them by the destruction of the lower leaves, and be much more difficult to eradicate than if taken in time. Where only a few individual plants amongst a number are affected, dipping in Tobacco water will prove an efficient means for the destruction of the insects, or they may be killed by fumigation, but, where this is resorted to, it will be safer to

repeat it slightly several times than to subject the plants to a severe application, as they are much easier injured by Tobacco fumes than many subjects.

Show and Fancy Pelargoniums.—Plants of these that after being cut back were shaken out and replaced in small pots, if not already transferred to those in which they are to bloom, should be attended to, as with them also, any approach to a root-bound condition will stop growth and proportionately weaken their flowering capabilities; good turfy loam, of not too light a nature, well enriched with rotten manure and a little sand added, is necessary to grow these plants satisfactorily, and, in potting, the soil can scarcely be made too solid, by ramming it tightly in with the potting stick. When it is left too light, there is always an inclination to run too much to leaf, with a comparative indisposition to flower. As soon as potted, they should at once be tied into shape, avoiding the over-formality consequent upon the unnatural trellis style of training sometimes resorted to, likewise that which leaves the branches with so little support that the plants cannot be moved when in flower to wherever required, without the sh oots falling about in a straggling unsightly manner. The fancy sorts, from their more sturdy growth, stand in less need of support, but both kinds should be trained sufficiently open to admit of plenty of light getting to the whole of the leaves, and to preserve a stout, bushy outline, which is their natural habit. Keep them, if possible, within a short distance of the glass in the lightest house available, and be careful for the next two months never to give water until the soil has got drier than it would be advisable to allow it in the case of most plants.

Chrysanthemums.—If cuttings of these are not put in, no time should be now lost. Choose shoots that are stout and strong and have not been drawn up weakly, for though the latter will root freely enough, they are a long time before they acquire strength. I should not by any means recommend their being put in heat to induce them to root, as is frequently done, as this has a direct tendency to cause top growth, which it is most desirable to avoid until roots are formed; the foliage made under such conditions is necessarily so soft and devoid of fibre that it does not admit of being kept alive on the plants, which leaves them bare at the bottom. They will strike easily but slower inserted in a mixture of one-half loam and sand, covered with ordinary propagating glasses in a greenhouse temperature kept near the glass. It is advisable to see that they are free from aphides before putting them in. If the plants from which they are taken have been at all affected with these it will be better to dip the cuttings in Tobacco water previous to insertion.]

Orchids.

Phajus.—*P. albus* and *P. Bensoniæ*, if not done growing, should be kept at the warmest end of the house, and supplied with sufficient moisture to maintain a healthy root action.

Calanthe veratrifolia will, in most cases, be about completing its growth; and the loam or peat, whichever it is grown in, should be kept only slightly moist.

Such species belonging to the families of *Cattleya*, *Lælia*, *Dendrobium*, *Oncidium*, and others, the growth of which is progressing at this season, and which, during that time, usually are removed to the East Indian house, should have as much moisture given to the roots as will assist them to complete their growth.

Intermediate House.—A temperature of from 48° to 50° in the night for some time, with 5° or 6° more during the day, will be about the right heat. Most of the warmer section of *Dendrobies* now at rest will find a suitable place here. The large, erect-growing species, such as *D. Calceolaria*, *D. Dalhousianum*, and *D. Paxtoni*, are not so much cultivated now as they used to be, no doubt on account of their tall, rather straggling habit, but even after being well managed so as to produce stout, fully-matured pseudo bulbs, they need to be well dried up to induce them to flower freely; the drying must be continued, without any application of water, right through the winter and spring till they show flower. If water be given previous to this a considerable number of the buds will run off into growth. The increase of atmospheric moisture, with a higher temperature later on in the spring, will be sufficient to cause the bulbs somewhat shrivelled to plump up and get through the first stages of the flower's development without the application of water to the roots. The short, thicker-bulbed section of *D. densiflorum*, *D. Farmeri*, and *D. clavatum* character, require a lengthened period of dry treatment at the roots, but their flowers do not run off into growth by the application of a little water at the roots if it becomes necessary to give this to prevent their shrivelling too much. The thicker-bulbed, drooping kinds, such as *D. Wardianum*, *D. macrophyllum*, *D. chrysotis*, and *D. primulinum*, are all free flowerers, and if they appear to be getting too much shrivelled may have now and

then a small quantity of water given them through the winter without its interfering with their flowering. The beautiful *D. Falconeri* requires well drying to induce it to bloom freely, and should have very little moisture given it before the flowers are unmistakably apparent or it will run off into growth. The equally beautiful *D. Devonianum*, and a few others of like character, also need a longer season of dry root treatment than most Orchids, but they commence to grow previous to the development of their flower buds, and require water to assist the growth in the spring before these make much progress. *Cattleyas*, *Lælias*, *Epidendrums*, *Brassavolas*, *Brassias*, *Broughtonias*, *Barkerias*, *Angulos*, *Miltonias*, *Chysis*, *Cycnoses*, *Eriopsis*, *Gongoras*, *Lycaestes*, *Mormodes*, and *Oncidiums*, with few exceptions, will succeed with similar treatment as to temperature and a moderately lengthened period of dry condition at the roots previous to the development of their flowers.

Cool Orchids.—The house devoted to these should now be kept at from 38° to 45° in the night, and 5° or 6° higher by day, according to the weather. The principal plants to be considered in this department are the *Odontoglossums* and *Masdevallias*, both of which, but especially the latter, must never be submitted to drying treatment at the roots. The different other cool species that need total rest through the winter, during which time they require to be kept dry, may be treated in this way so far as will not entail much shrivelling, which is not likely to occur, as the atmosphere here will not be nearly so dry as that where more fire heat is used.—T. BAINES.

Flower Garden.

At this comparatively cheerless season, nothing renders a garden more thoroughly enjoyable than dry and neatly kept walks. Now is the time for making new ones and improving and renovating those already in existence. If the gravel be discoloured or Moss-grown, break it up with forks, and leave it loose until rain has fallen; then rake it over and roll it down, when the walk will look as if fresh gravelled. Walks under the shade of trees and shrubs where there is no Grass to be killed, need not be broken up, as a sprinkling of salt will both kill the Moss and give brightness to the gravel; but for use in open spaces salt is not to be commended, as, even with the greatest care, it frequently kills the Grass verges, and after a time it acts as a manure, and increases rather than diminishes weed growth. Levelling turf and relaying it should be forwarded as fast as the weather permits; also all grubbing, trenching, and alteration. Leaf clearing should ere this be completed, and now the shrubby borders may have their annual pointing over, an operation which is necessary, not so much for the benefit of the shrubs as for the removal of weeds and the fixing of blowing leaves. Herbaceous borders are now looking weedy, and where, as is usually the case, such borders contain large clumps of bulbous plants, not much can be done to improve matters till these show themselves above ground, but as soon as they do so, contemplated rearrangement and division of the plants may be proceeded with, and the borders may be manured and dug as deeply as the occupants will permit. Several kinds of plants that have of late withstood our mild winters have succumbed to the late severe frost. *Eucalyptus globulus*, not protected, is quite dead, while those that were covered with Bracken are alive, so far as the protection extended, and so are the Australian *Dracænas*, which have stood out during the past four winters unimpaired; those not protected are dead, but the others, though much injured, are alive; it therefore becomes a question how much frost can even a little covering keep off. Such covering should be applied now to plants that have weathered the storm, for their constitution being weakened, such another frost would be very likely to kill them. Roses do not seem to have suffered at all, but as a safeguard, the beds should now be thickly mulched with manure, which will also serve as protection. If the weather be open and favourable, the sooner all intended planting of Roses is completed the better. Standards and others requiring support should be staked at once, to prevent injury from high winds, and the beds should be mulched as before recommended. Beds of *Anemones*, *Ranunculuses*, and choice *Hyacinths* and *Tulips* that are peeping above ground will be all the better for a covering of Spruce or Laurel boughs laid thickly over them. *Echeverias* have suffered severely, and the reserve stock must be looked to, in order to see that no losses occur amongst them. All other bedding plants, more particularly those required in quantity, must be examined, and tender kinds introduced into heat for the production of cuttings. See that roots of *Dahlias* and *Cannas* are secure from all danger from frost; the middle of February is sufficiently early to introduce them into heat.—W. W.

Auriculas.—After the disappearance of the severe frost, and when the frames had been well opened up a few times, it was seen that quite half the outer leaves of our *Auriculas* were injured; these have now been removed, and only the centre tufts of late

autumn-formed leaves left. Still admit plenty of fresh air, and remove the lights altogether during fine weather.

Carnations and Picotees.—Ventilate frames in which these are growing, freely; but let no rain fall upon the leaves. Raise the lights by tilting them on blocks, and in fine weather remove them. If there be any traces of aphides on the leaves, fumigate on calm nights until they are destroyed. A pair of sharp-pointed scissors is useful to cut off portions of decayed leaves. Plants in beds must be looked over occasionally, and those not steady in the ground must be made firm by pressing round the base of the plants, and a neat stick should be placed to each in order to prevent any injury from high winds.

Dahlias.—The roots of these are sometimes injured by being stored in unsuitable places, such as those that are either close and damp, or too dry. It is well, therefore, to examine them carefully. I have seen a collection of fine sorts injured from the roots being quite desiccated by being placed too near the hot-water Pipes in a Mushroom house. Close, damp sheds, too, with a northern exposure do not answer. If the roots are not keeping well, look over them, remove decayed portions, and place them in boxes in dry mould, removing the boxes to a Vinery, Peach house, or other structure from which frost is excluded.

Hollyhocks.—The leaves of these in frames show the effect of the severe frost which we have experienced, therefore all decayed leaves and portions of leaves should be removed at once and air should be given on all favourable occasions, excluding damp. In foggy or close, wet weather, it is best to keep the lights closed, mould soon gathers on decayed portions and must be looked after. Plants in pots in houses from which frost is excluded are not likely to suffer any injury; they must not, however, be allowed to become overdry at the roots.

Pansies.—Favourable weather should be taken advantage of, to pot such plants as are intended for pot culture; 6-in., 7-in., or 8-in. pots answer best, and either one of these sizes may be used, according to the convenience of the owner. One plant, if large enough, will be sufficient for a pot, but small plants may be utilised by placing two or three in each pot. The soil ought to consist of about four parts turfy loam, one rotten manure, one leaf-mould, and one sharp sand. Press the mould in firmly with the fingers round the roots of the plants, and see that plenty of drainage is placed in the bottom of the pots.

Polyanthuses.—These require similar treatment to Auriculas, but it is not well to allow the roots to become too dry. The trusses, too, are formed earlier than those of Auriculas. The plants require plenty of ventilation, and the leaves being more fragile and brittle than Auricula leaves, are also very liable to be attacked by insect pests. Red spider, thrips, and green fly attack them even in winter; these must be destroyed by washing the foliage and fumigating the frames. It is worthy of notice that the leaves are seldom attacked when the plants are in good health. Plants of these or of Auriculas in beds must be seen to, and if the roots be exposed, carefully dress the surface between the plants with light, rich soil, pressing down the plants rather firmly. J. DOUGLAS.

Indoor Fruit Department.

Vines.—The earliest house will now be advanced towards the disbudding stage, and this should be done with judgment. As a rule, one shoot to a spur is sufficient, but where the Vines are a sufficient distance apart to permit of the full development of the extra foliage, two shoots are best. Keep up a general average temperature of 65°, and allow the heat to fluctuate somewhat with the outside temperature, and, if the Vines must be pushed on, let it be by day firing, accompanied by daylight, as it is only natural that Vines, like plants of other descriptions, should have their night season of rest, which can only be attained by keeping the temperature as low as is possible compatible with the health and due progress of the Vines. The roots of early forced Vines should be confined to inside borders, and when water is required it should be warm, say from 90° to 95°; the warmth thus communicated should be retained as long as possible by immediately mulching with a thick layer of litter fresh from the stables, the ammonia arising from which will also supply an element as regards successful culture. Thus treat all borders now where the Vines are expected to produce ripe fruit in June next. Early Vineries that have outside borders should have been covered with straw, Bracken, or leaves early in October, to retain the heat deposited in them by the summer sun, and shutters or other covering should be used to throw off snow and heavy rains. In this manner a more equable temperature is maintained than by the questionable method of hotbed heating, the fluctuations of which are so great. If a bed, 2 ft. in thickness of leaves and stable litter, can conveniently

be kept inside the Vinery, it will serve the double purpose of increasing the temperature and obviating syringings, and it will also help the expansion of buds. In mid-season houses, as soon as the fruit is cut, forthwith prune the Vines and they will go more effectually to rest. Indeed, to do them justice, all Grapes should now be cut and put in bottles of water; they will keep better if cut now than if left on the Vines another month. Any dry room in which a temperature can be kept above 40° is suitable for the purpose, and as much wood as possible, both behind and in front of the bunch, should be cut along with it to act as a deterrent to an overplus of moisture being communicated to the fruit.

Pines.—Ripe fruit for the London season is generally required in quantity; therefore Queens that are now showing fruit should be encouraged accordingly. Thus managed, they will be ripe from the beginning of May and onwards. A bottom-heat of 85° should be maintained, and an atmospheric heat ranging from 55° on cold nights to 75° or 80° on warm days, should be kept up. To all plants showing fruit give a soaking with water at 80°, and they should not again be allowed to become dry, nor, on the other hand, should they be kept constantly wet. Any expected to show fruit, and that as yet manifest no signs of it, should be kept dry; the check thus given rarely fails to produce the desired effect. Succession plants at this season require great watchfulness; the weather, having been severe, has necessitated hard firing, and they will have become very dry, a circumstance which is apt to cause them to fruit prematurely. It is better to cover the pits with mats, &c., at night, thus not only saving firing, but inducing sturdier growth. Atmospheric acidity is a great foe to successful Pine culture. To plants swelling off fruit at this dull season afford every attention; water with tepid guano water whenever they seem approaching a dry state; a humid atmosphere of 75° is desirable, and all the sun and light they can get; therefore, the glass should be kept scrupulously clean. Leaves for plunging preparatory to the general shifting which must soon take place, should be stored and allowed to consolidate. Soil should also be got under cover, and everything should be in readiness for action as soon as a mild period has arrived.

Peaches.—These do not like excessive forcing. Failure, or rather partial failure, has more than once been the result of attempting to force Peaches against time. The earliest houses are apt to drop their buds previous to expansion; this is generally attributed to the trees having suffered from drought the previous season, but, though this may occasionally be the cause, a more general one is the undue excitement of the buds by beginning to force with too high a temperature. Forcing should be very gradual till after the fruit is set, and then, if necessary, a push may be made up to the stoning period, when excitement again becomes dangerous, but, after that, hard forcing is safe enough. In starting to force a house, see that the border is thoroughly moistened throughout, and do not exceed at night 45°, and, as in the case of Vines, prefer rather to fire by day, with the accompaniments of light and air, than at night. Syringing, night and morning, trusses, walls, and floors till the blooms begin to open, when a drier atmosphere is requisite. Prune late houses; wash or paint them over, as a preventive against insects, with soap-suds, Tobacco water, and sulphur, made to the consistency of thin paint by adding clay or cow manure to cause adhesiveness. This done, top-dress the borders by removing all the loose, inert, top soil, and replacing it with good loam, a little bone-dust, wood-ashes, or pounded charcoal. Peach borders in either early or late houses should never be allowed to get dry, and, if the drainage be good and there be a free outlet, there need never be any fear of the borders getting too wet. New borders in course of formation should be completed as soon as possible as it is quite time the trees were planted if good growth be desired this season. A good Peach-producing soil should consist of loam of medium texture, rather stiff than light, chalk or lime scraps, and charcoal. Manure, if required, is best applied in a liquid state when the trees are in full vigour.

Strawberries.—Having no Strawberry house, our first batch (200) has been started in a pit filled with Oak leaves to create warmth. The plants are not plunged but simply set closely together on the bed; here they have abundance of air, and the crowns soon start into active growth. They are gradually removed from this pit to fill shelves in Melon and Peach houses, according to the expected demand, and now our first batch—*Vicomtesse d'Herfaut de Thury*—is throwing up their flower stems most sturdily, a fact attributable rather to the strength of the plants than to the culture which they have had since being introduced to the forcing pit. Large, well-ripened crowns, constitute the acme of success in Strawberry forcing. At this early and unseasonable period, as soon as the blossoms open, artificial distribution of pollen is requisite in order to insure a good set. Plenty of rarified air is beneficial, and, indeed, necessary, but cold draughts prove fatal, and so does a muggy atmosphere. Keep the

plants moist, and use for the present clear, tepid water only. Protect the later plants from heavy rains and severe frosts. All should be housed in cold pits, but, lacking that convenience, plunge them in ashes or leaves, and cover with shutters or tarpaulin as may be required.

Melons.—For fruit required early in May sow at once, and, in order that they may germinate kindly, they will require a bottom heat of 80°. The seeds should be put in pairs in 3-in. pots, and, when up, the weakest plants should be destroyed. When sown, as is frequently the case, a number of seeds together, the check caused by division is considerable. Grow the plants as near the glass and with as much light as possible. A shelf in a Pine pit is a much better position than if plunged in a bottom heat a long distance from the glass.—W. W.

ROSES.

SHIELD BUDDING AND GRAFTING.

CHOOSING THE SHOOTS FROM WHICH THE SHIELD-BUDS ARE TO BE TAKEN.—This choice is all the more important seeing that the constitution of the eye to be shield-budded has a great influence not only on the vigour of the resulting Rose bush, but also on its inflorescence and longevity. An eye taken from a strong shoot, for instance, will cause a luxuriant growth of leaves, forming a bush with a beautiful head, but with very few flowers. An eye taken from the lower part of a shoot develops but slowly, and remains a long time dormant. A bud taken from the angle of the last two leaves immediately under the flower stalk of a Rose tree which, under ordinary circumstances, is intended for flowering purposes will, when grafted, induce a precocious inflorescence and interfere greatly with the growth of the Rose tree. As the flower is formed on the extremity of the shoot, the growth of the latter will be stopped and the sap will be sent back to feed useless shoots and growths. This description of bud is, however, sometimes used exceptionally, in order to produce several successive flowerings in varieties which bloom with difficulty. It is, therefore, mostly from the middle of the shoots that we must choose the best buds for shield-grafting. The shoots chosen should be healthy, sufficiently mature, and full of sap, and the buds themselves should be vigorous and well-formed, and of dimensions proportionate to the stock upon which they are to be grafted. We may always ascertain whether a branch or shoot is full of sap or not by its extremity being herbaceous and continuing to grow, besides which we may recognise the fact by the sap oozing out of the incisions made when we cut out the shield-bud.

PREPARING THE STOCKS FOR SHIELD-BUDDING.—If shield-budding is not performed upon the spot, the shoots chosen are cut off, and the top, which is generally more or less herbaceous, is pruned away. The leaves are also removed, the lower half of the petiole alone being allowed to remain. The shoots are tied up into little bundles and numbered, and are either kept wrapped up in a damp cloth, or else their lower ends are plunged into a vessel of water, so as to keep them fresh and moist. These precautions are sufficient if the spot at which they are to be used is not very far off, or the time not very distant; but if, on the other hand, they have to be used at a distance, they are piled up in gradually decreasing layers on a bed of slightly damped Moss, so that they may form a kind of cone or sugar-loaf, which is packed up in paper, and secured with string. If, after having cut off the shoots, we find any shoots with wrinkled bark, or with eyes which seem to be too small, they should be soaked in water for twenty-four hours, when the bark will become smooth and the buds will swell out. When we have stock plants from which we can take the buds, it is a good plan to examine the shoots some time previously, so as to know the exact condition of the eyes. If they be flat and small we need only pinch off the end of the shoots about a week before taking off the buds. This operation has the effect of sending back the sap into the buds, and of causing them to swell out very rapidly, so much so that they will push into shoots if we delay cutting off the slips too long.

SHIELD GRAFTING WITH A GROWING EYE.—If, as we have said before, the operation of pinching off has been properly carried

out, and the shoots are sufficiently strong and solid, we may begin to graft in June, which will allow us later on to take buds with dormant eyes from the shoots of these grafts. In the climate of Paris this operation is performed at the end of June or during the month of July. The two important conditions to be fulfilled is, to have subjects with healthy shoots, full of sap, and with well-formed eyes on the grafts. We may begin grafting even earlier than this if we chose our buds from plants which have passed the winter in a greenhouse. Some days before budding we choose a sufficient number of subjects for the purpose, bending down the shoots to be budded, and tying their tips to the stem of the Brier stock. By this means the sap becomes concentrated in the elbow of the shoot, which greatly favours the development of the grafted bud. A fortnight or three weeks after the grafts have been put on we must examine them to see if they have taken. We can easily judge whether this has happened by observing whether the petiole has fallen off, and the bud itself is quite fresh and green. If so, we may remove the ligatures so as to avoid undue compression and possible fracture of the shoots. As the buds grow into shoots we must pinch off the tops of all the shoots as soon as they are long enough. When the shoots of the graft have reached the length of 8 in. we may prune them back until only two eyes are left. With dwarf Rose trees we must bend down the young shoots and fasten them down by means of hooked pegs fixed in the ground. Grafting with a growing eye allows us to multiply new varieties with great rapidity, and is of good service when the frost has destroyed the grafts made with dormant buds. It is also useful for supplying us with shoots for budding the grafts of the year before.

SHIELD-GRAFTING WITH A DORMANT EYE.—This kind of grafting is carried on in the neighbourhood of Paris from the middle of August to the end of September. This period may be anticipated or exceeded according to the temperature. As in grafting with a growing eye, we must use shoots with properly-formed and healthy eyes, but the sap, instead of being in full activity, ought to be rather on the decline. There must, however, be sufficient sap in the bud for it to take when grafted, but not enough for it to develop into a shoot. In this case the eye will lie dormant until the spring. In order to prepare the subjects to be budded, we must examine them a week or a fortnight before the time for grafting arrives, and pinch off the tips of all the shoots on the branches to be budded, as well as the smaller shoots. In the neighbourhood of the place where the graft is to be made, the shoots allowed to remain on the top of each branch must be reduced to two or three, rarely more. All the others must be cut down as they grow, otherwise the sap will receive a check, wasting itself through the wounds of the cut branches. It is better to leave them as they are than to interfere with the flow of the sap. The shield-buds should be placed at the angle of the stem and the shoot, two or three on each subject, according to its health and the number of shoots which have been allowed to remain. When a subject has only one branch fit to be grafted with a shield-bud, we may graft it a second time by placing another shield-bud on the opposite side of the stem to the first one. If the branches left are too weak, we may graft two shield-buds on the stem itself underneath the branches, as shown in Fig. 24, A and B. In the case of dwarf Rose trees, we should graft two shield-buds on the lower part, about 3½ in. from the ground, as shown in Fig. 24, but, in order to succeed, we must have young subjects with smooth bark. When the shoots of the grafts are well forward the ligature is taken off, and the branches and upper portion of the stock at C, as shown in Fig. 24. In the other cases the stems and branches are cut off just over the bud, which is immediately above the last graft. This shoot is destined to bring the sap into the branch, and provide food for the buds. It is cut off along with the part of the stem upon which it grows when the buds are old enough to take care of themselves. Having pruned the branches, we must protect them from being broken by the wind with sticks of 1 ft. 4 in. to 1 ft. 8 in. in length. The stick is placed against the base of the branch, and it ought to be 1 ft. taller than the last bud. As the shoots increase in size they are trained against the stick, by which means we avoid the danger of breaking them or tearing them from their position.

PINCHING BACK THE FIRST SHOOTS.—The end to be aimed at during the year which follows the operation of shield-grafting is not so much that we should obtain a number of flowers, as that we should form a Rose bush with a good head. We must not, therefore, hesitate to pinch back the new shoots to within three leaves of the top, whether there is, or not, any provision for flowers, as soon as ever these shoots have reached a proper size. The sap is checked by this operation, and is thrown into the side shoots, causing them to swell and very frequently to yield a mass of flowers that will fully compensate us for the loss of the earlier flower buds.

COLLAR GRAFTING.—The third method of shield-grafting consists in opening a small trench along the line of the subjects about to be grafted, so as to lay bare their bases, which must be well cleared of mould with the fingers. Two or three



Fig. 24.—Grafting by Double Shield-budding.

shield-buds are then grafted on the principal roots at the spot where they join the stem. Before the cold weather sets in, indeed, as soon as the grafts have taken, the ligatures are removed and the trenches are filled in, so that these grafts are not uncovered, or the trees pruned, until the first fortnight in March, by which time there is generally no longer any danger of frost. By this mode of grafting it becomes easy to obtain free stocks, especially in the case of Hybrid Roses, by means of the roots which spring from the collars of the graft below ground. This modification in the method of shield-grafting also places the buds beyond the reach of frost. It is by adopting this method that the Rose growers of Lyons have for several years used young seedling Briers, upon which they have grafted their dwarf Roses, by shield-budding the collar of the root. This method gives very good results, so far as the growth of the graft goes, but in no way modifies the spreading nature of the Rose tree. We have been able to verify this fact at the establishment of M. Lévêque, fils, of Ivry-sur-

Seine, in the case of some Tea and Hybrid Roses which were grafted on some seedling Briers which were grown at Lyons. These Rose trees, which were growing in pots, had produced abundance of shoots from such roots as had touched the edges of the pots, and we even remarked some with a number of latent eyes on the collar below the graft, while on others there were shoots 1 ft. long, which had sprung from the collar by the side of the graft. It is, therefore, a mistake to suppose that by using seedlings we have in any way modified the inherent conditions of growth of the Brier, whose nature it is to reproduce itself by suckers which it throws off from all parts of its underground system, for we have only to divide the roots into pieces and place them in favourable conditions to obtain as many plants as there were pieces planted in the soil. In the month of March we take advantage of the fine weather to examine the grafts, prune down each shoot to within two eyes of the graft, and to take off all the ligatures. As for those subjects upon which the grafts have not been successful, we must cut down the shoots on the stem in order to promote the growth of fresh shoots, which may serve for the reception of fresh shield-buds. The other ordinary operations consist in placing training sticks, fixed to the tops of the Brier stocks, to serve as supports for the young shoots, which are tied to them with bast or rushes as soon as they are long enough, so as to protect them from the effects of the wind. While the young shoots are growing we must pinch down the shoots which spring from the two eyes left above the shield-grafts, as well as those growing on the sides of the stems, so that they may not draw away the sap from the grafts. Finally, when we desire that the shoots which have sprung from the stock should become sacrificed, we pinch them down to within about 5 in. of their base, but leaving the stumps which grow above the grafts until towards the months of August or September, that is to say, when they are ready for transplanting.

M. LACHAUME.

THE ROSE ANNUAL.

MR. WILLIAM PAUL'S Rose Annual for 1878-79 has just reached us, and fully equals its predecessors in point of interest. It contains coloured figures of Duchess of Bedford and Jean Liabaud (Hybrid Perpetuals) and of Madame Lambard and Souvenir de Madame Pernet (Teas). The letterpress treats of—1, the current year; 2, on new Roses; 3, on Rose stocks; 4, the Rose shows of 1878; 5, a mausoleum of Roses; 6, correspondence in reference to Roses. From these we select the following extract on new Roses.

Of the novelties of 1876-7 we named some of the best in last year's Annual. We now confirm that list, to which further experience enables us to add the following:—Hybrid Perpetuals—Duchesse d'Osuna, very bright and free in autumn, also distinct; Emily Laxton, Gabriel Tournier, very fine; Lady Mary Keith, Madame de Montchaudeau, Madame Devert, Madame Sophie Fropot, Monsieur Fillion, and Bourbon, Queen of Bedders. Coming down one year (1877-8), we find some really valuable novelties, of which the following seem the most promising. Hybrid Perpetuals—Dean of Windsor, Constantin Fretiaeff, Earl of Beaconsfield, Alfred K. Williams Boieldieu, Edouard Pynaert, Madame Jeanne Bonier, Madame de Laboulaye, Madame Gabriel Luizet, Madame Louis Donadine, May Quennell, Mrs. Laxton, Penelope Mayo, Red Dragon, Rosy Morn, Souvenir d'Adolphe Thiers. Tea-scented—Madame Alexandre Bernaix, Madame Lambard, Madame Maurice Kuppentheim.

The announcements from France this autumn are sufficiently numerous. One cultivator, Nabonnand, offers no fewer than thirteen novelties, and another, Eugène Verdier, ten, for which he asks 30 fr. each. This does not look as if the French growers had lost confidence in their new Roses, whatever the English growers may think on the subject. The following is an alphabetical list of the principal new French Roses of 1878-9.

1. ALPHONSE KARR—Tea-scented—(Nabonnand).—Growth vigorous; flowers large and full; colour purple, shaded with crimson, centres brighter. A seedling from Duchess of Edinburgh.
2. BARTHELEMY LEVET—H. P.—(Levet).—Growth moderate; flowers large and full; colour bright rose.
3. CLAUDE BERNARD—H. P.—(Liabaud).—Growth very vigorous; flowers large, full, and globular; colour deep rose. A seedling from Jules Margotin.

4. DEUIL DU COLONEL DENFEET—H. P.—(Margottin père).—Growth very vigorous; flowers large and full; colour velvety purplish black; one of the darkest of this section.

5. DOCTEUR BAILLON—H. P.—(Margottin père).—Growth very vigorous; flowers large and full, and very finely shaped; colour bright crimson, shaded with purple.

6. DOCTEUR BERTHET—Tea-scented.—(Pernet).—Growth vigorous; flowers large and full, opening well; colour pale rose, brighter at the centre.

7. DOCTEUR JENNER—H. P.—(Margottin père).—Growth vigorous; flowers large and full, with finely-rounded petals; colour carmine-red.

8. FRANCOIS GAULAIN—H. P.—(Schwartz).—Growth very vigorous; wood smooth; flowers large and full; colour claret red; one of the deepest-coloured Roses known.

9. GASTON LEVEQUE—H. P.—(Lévêque et Fils).—Growth vigorous; flowers very large and full; colour brilliant crimson, shaded with vermilion and fiery red; one of the freest and most perpetual-flowering varieties amongst the Hybrid Perpetuals.

10. HENRI VILMORIN—H. P.—(Lévêque et Fils).—Growth very vigorous; foliage ample and showy; flowers large and full, and of exquisite semi-globular form; colour red, shaded with purple and vermilion.

11. INNOCENTE PIROLA—Tea-scented.—(Ducher).—Growth very vigorous; flowers very large and full with large elongated buds; colour pure white, sometimes tinted with rose; said to be as fine a flower as Niphetos, and a better grower.

12. JOHN SAUL—H. P.—(Ducher).—Growth very vigorous; flowers very large, full, and globular; colour clear red, the back of the petals shaded with carmine. A seedling from Antoine Ducher, and a fine autumnal bloomer.

13. JULES CHRETIEN—H. P.—(Schwartz).—Growth very vigorous; flowers very large and full; colour deep bright red, shaded with purple. This Rose has proved a good autumnal bloomer, and has been awarded two bronze medals.

14. MADAME AUGUSTE PERRIN—Noisette Perpetual.—(Schwartz).—Growth vigorous; flowers of medium size, full; colour beautiful pale rose, the reverse of the petals whitish. Silver medal at Lyons Rose Show, 1878.

15. MADAME CHARLES MEURICE—H. P.—(Lévêque et Fils).—Growth very vigorous; flowers large and full; colour velvety blackish-red, shaded with purple.

16. MADAME ETIENNE LEVET—Hybrid Tea.—(Levet).—Growth vigorous; flowers large and full; colour cherry red, shaded with coppery-yellow.

17. MADAME EUGENE CHAMBEYRAN—H. P.—(Gonod).—Growth vigorous; wood smooth; flowers large, full, and globular; colour pale rose, shaded with salmon-rose. A seedling from Victor Verdier; a good autumnal bloomer.

18. MADAME EUGENE VERDIER—H. P.—(E. Verdier).—Growth vigorous; flowers extra large, full, and with very large petals; colour bright satiny rose, shaded with silvery rose.

19. MADAME LILIENTHAL—H. P.—(Liabaud).—Growth very vigorous; flowers large, full and cupped; colour bright rose, reflexed with salmon-rose.

20. MADAME MORANE JEUNE—H. P.—(Jamain).—Growth vigorous; flowers large, full, and cupped; colour satin rose, brighter in the centre, and the backs of the petals silvery. Beautiful in bud, and a good autumnal bloomer.

21. MDLLE. BRIGITTE VIOLETT—Hybrid Tea.—(Levet).—Growth vigorous; flowers large and full, produced in clusters; bright rose, slightly tinted with violet.

22. MDLLE. LYDIA MARTY—H. P.—(Liabaud).—Growth very vigorous; flowers of medium size, full; colour rosy flesh, shaded with lilac.

23. MONSIEUR LAPIERRE—H. P.—(Gonod).—Growth vigorous; flowers of medium size and finely shaped; colour shining red, shaded with velvety-crimson. A seedling from *Géant des Batailles*.

24. PANACHEE D'ANGERS—H. P.—(Moreau-Robert).—Growth very vigorous; flowers of medium size, full; colour pale rose, finely striped and marbled with purple and deep violet.

25. PIERRE CAROT—H. P.—(Levet).—Growth vigorous; flowers of medium size, full, and finely formed; colour deep red, changing to bright clear red.

26. PREFET LIMBOURG—H. P.—(Margottin fils).—Flowers large, full, and finely formed; colour dark velvety red, shaded with violet. A good bloomer in summer and autumn.

27. PRINCESSE MARIE DOLGOROUKY—H. P.—(Gonod).—Growth very vigorous; flowers very large, cupped, and finely formed; colour bright satin rose, very often striped with carmine. A seedling from Anna de Diesbach.

28. REINE MARIE HENRIETTE—Tea.—(Levet).—A red Gloire de Dijon of climbing habit, and with large and full flowers; named, by permission, after Her Majesty the Queen of the Belgians.

29. SOUVENIR DE LATFAZ—H. P.—(E. Verdier).—Growth very vigorous; flowers of medium size, very full, and of fine shape, produced in clusters; colour bright crimson, shaded with purple, and with fiery red centres.

30. SOUVENIR DE VICTOR VERDIER—H. P.—(E. Verdier).—Growth vigorous; flowers large and full; colour bright scarlet, shaded with purple and crimson. A good autumnal bloomer.

31. WILHELM KOELLE—H. P.—(Pernet).—Growth vigorous; flowers very large, double, and globular; colour very bright red. A seedling from Alfred Colomb; of good habit, and flowering freely till late in the autumn.

32. WILLIAM ALLEN RICHARDSON—Noisette.—(Ducher).—Growth very vigorous; flowers large and full; colour fine orange-yellow.

Of my own introductions, Countess of Rosebery, Duchess of Bedford, and Souvenir de R. Dudley Baxter, it does not become me to speak, their merits have been fully recognised by the horticultural Press. We also saw exhibited and thought well of Dr. Sewell and Harrison Weir.

When to Prune Roses.—If we take the country collectively experience clearly proves that early pruning is anything but advisable, as when the shoots are made so early as to get injured by spring frosts, it has a serious effect upon their blooming; but where there is a large stock in favoured localities it may be desirable now to prune a few by which means, if they escape frost, the season's flowering will be extended by getting some blooms earlier than they otherwise would have been.—I. BAINES.

THE FROST AND THE THAW IN WALES.

So far the winter has been unusually severe for this part of the country. During the greater part of December we had nearly 20° of frost nightly, but for a few days before and after the new year a thaw came, and, as in Mr. Fish's case (p. 22), the frost does not seem to have been so disastrous as might have been expected. My opinion, however, as to the cause of this, differs from that of Mr. Fish. The thaw itself was sudden and complete, certainly the reverse of gradual. Neither do I think the hoar frost kept the plants warm, but I am strongly inclined to think that the hot weather of last summer had rendered the frost powerless. I never remember seeing the wood of all kinds of trees and shrubs better ripened than it was last autumn. This was not only the case with fruit trees, but also with most tender shrubs, such as Myrtles, Hydrangeas, Camellias, &c. Not one of these has been protected, and yet they look as fresh now as they did in October. Two plants of the American Aloe have proved quite hardy on the top of two pillars where they stood all last summer fully exposed to the sun, but the other two behind a wall, quite hid from the sun, are killed. Broccoli behind a north wall are useless, while those in open quarters are as fresh as ever. Young Canliflowers, raised and left on a fully exposed south border, look as well as ever I saw them in frames at this time of year. Others, raised in a sheltered spot, have all but disappeared, and in all directions I observe that where every kind of plant was most exposed the frost has had least effect. I believe that had a sunless, wet summer preceded such a severe winter, there would have been more damage done to vegetation than has ever been heard of. It is, I think, a great mistake to plant tender plants in sheltered spots, shelter often doing harm than good. CAMBRIAN.

The Late Frost in Ireland.—From December 2 until Christmas Day we registered in the aggregate 382° of frost, varying nightly from 10° to 28°, but reaching a climax on the nights of the 23rd and 24th. On the former night the thermometer fell down to zero, and on the latter (Christmas Eve) it indicated (about midnight) 2° below 0. On Christmas Day, however, a thaw set in, which is continuing. We had a depth (1 ft.) of snow lying on the ground, but we may, nevertheless, expect to see many vacant places in herbaceous borders, and also amongst tender shrubs.—S. K., Templepatrick, Co. Antrim.

The Late Frost.—It may interest some to know that on Christmas eve Negretti & Zambra's thermometers indicated—No. 1, 1°; No. 2, zero; the latter was about 100 yards from the other.—J. LAING, Stanstead Park Nursery, Forest Hill.

FLOWER FORCING IN MARKET GARDENS.

AZALEAS.—The demand for Indian Azaleas just before Christmas is very great, and thousands of plants are yearly imported from Holland and Belgium for forcing into bloom at that time. They are, of course, grown in Holland in the open air, and after they have formed their flower-buds they are taken up and sent by shiploads to London. Florists here pot them and place them in heat at once, and bring them into bloom, for the quicker they are brought into bloom after being potted the more likely are they to prove remunerative, as, if left too long, the check they receive in transit and potting causes them to shed their blooms, often to a serious extent. Kinds with striped, red, white, and crimson flowers are generally the most abundant, and single plants often bear several distinct-coloured flowers. The different varieties are grafted on stocks of a free-growing kind, and are on stems 6 in. to 8 in. long. Neat little plants, 1 ft. to 1½ ft. high, laden with blooms (which, however, are usually much smaller than those produced on English-grown plants), sell readily at from 2s. 6d. to 5s. each in the market retail. The chief advantage of imported plants is that they are much earlier in coming into bloom than English-grown plants. Of late years, however, some nurserymen have raised their own Azaleas, and they find them to be of a much better constitution than imported plants, and, by growing them in quantity, they can sell them almost as cheap as if foreign plants had been bought. The stocks, which consist of a strong-growing, purple-flowered kind are struck from cuttings or raised from seed; they are kept in cool houses in 4-in. pots, and in summer and autumn they are grafted with the best market sorts, and kept rather close until a union is effected, when they are grown in an airy temperature, receive copious supplies of water at the roots, and in three or four years handsome plants are the result. Several growers devote large houses to specimen Azaleas for supplying cut blooms at Christmas and Easter, these being the seasons when they realise the best prices, and at these times they contrive to have as many plants in flower as possible. The old white variety is the chief kind grown, coloured flowers being little sought after in the market at these festive times. The American hardy Azaleas are not grown very largely for market on account of their flowers dropping so quickly after being cut, and their colours are not such as are generally sought after in the market. The improved *A. mollis* and its varieties have, however, better-formed and more wax-like flowers, which stand cutting much better, and these may probably be largely grown for the purpose when a good stock of them can be got. Among the most favoured kinds of Indian Azaleas for market purposes are the rose-coloured *Bernard André* and its white variety. These are single-flowered kinds, but of great decorative value; the habit of the plants is good, and the flowers, which are freely produced, last for a long time in good condition. The best double kinds are: *Narcissiflora*, very early and pure white; *Imbricata*, white, slightly flushed with pink; *Borsig*, large, very double, and of snowy whiteness; *A. Rollisoni*, a good double, red flowered Alpine variety, will, when plentiful, probably be largely grown for market, both for the sake of its flowers (which resemble in appearance those of a *Balsam*) and as a pot plant; it is perfectly hardy and very floriferous, dwarf in habit, and altogether a desirable species.

CAMELIAS.—In the shape of plants, Camellias are not sold in the market in very large quantities. Now and then a few small plants, bearing some five or six buds or blossoms, may be seen, but the chief use of the Camellia is to

supply blooms during the winter months, and for this purpose its culture is both extensive and profitable. Where a house with a northern aspect can be assigned to Camellias, and they are planted out in good turfy loam, and otherwise properly attended to, the yield of bloom on established plants is immense. The great bulk of the small plants of Camellias sold in London are imported from Holland and Belgium. They usually arrive in autumn, when their bloom-buds are set, and these they sometimes throw off shortly after being in the hands of the florists. Imported plants, however, come into bloom early, and a few good blooms from each nearly pays for the purchase of the plants. Nearly every market grower who has a spare corner cultivates Camellias, and many of the indoor fruit growers plant them largely in late Vineries, which are capital places for them. Mr. Yeldham, of Hammersmith, has a lean-to Vinery some 250 ft. in length, the back border of which contains thirty-five fine specimens averaging from 12 ft. to 15 ft. high, and as much through. All blooms that are sufficiently advanced are cut on each market morning, and on some occasions as many as 320 dozen have been gathered at one time. In early Vineries Camellias will not succeed, but in late houses they thrive admirably, the Vines affording them shade during the summer, and yet not obstructing light from them during the winter, when they are opening their blossoms. The old Double White is the only variety grown in this house, but a few good specimens of red kinds may be found in other houses about the place. The chief points in the culture of the Camellia are good soil in which to grow, plenty of water at the roots, cleanliness from insects and black fungus, and, last, but not least, plenty of air when the bloom-buds are swelling. Camellias are always cut for market when about half expanded; they have no stalk attached to them, as the florists in the market wire them, and in this way the flower really lasts longer than it would do on its own stalk.

CYCLAMENS.—No plant probably has increased so much in public favour in so short a time as the Persian Cyclamen. For every plant seen in the market a few years ago from the time we write there are now a hundred. One of the most celebrated growers of Cyclamens is Mr. Smith, Ealing, who cultivates from 12,000 to 15,000 plants annually, and who has them in flower from autumn to spring. The seed is sometimes sown in autumn and sometimes in spring, as soon as gathered; but the autumn-sown plants, if grown under favourable conditions, make flowering plants the quickest—and, as a rule, they flower best. The seed is sown in pans or shallow boxes, placed on a bed of Cocoa-nut fibre in which there is a gentle bottom-heat. The soil is kept continually moist; and, to attain this object, some place Moss on the surface. In a month or six weeks the seeds germinate, and the boxes are then placed near the glass, still keeping them in a warm house. When the young plants have made bulbs they are pricked off into other boxes of light, rich soil, the next shift being singly into 4-in. pots, and finally into 5-in. or 6-in. ones. During summer they are grown in pits and frames out-of-doors, all the heat required being supplied by the sun. Plenty of heat, air, and moisture constitute the secret of success; and, when in bloom, the chief enemy to guard against is damp. Perhaps a more interesting display than Mr. Smith's plants make when in full bloom it would be difficult to find. They are kept in low span-roofed pits until they come into bloom, when they are removed into light, airy, span-roofed houses, and placed in beds 6 ft. wide on each side of the pathway, which runs along the centre. I have seen three or four houses 50 ft. long thus

occupied. The plants are flowered in 5-in. pots fifteen months from the time of sowing the seed, and sometimes the bulbs measure $2\frac{1}{2}$ in. in diameter, whereas a few years ago it took several years to produce such bulbs. The improvement in the quality of the flowers, too, is quite as great as that in the culture. We have now flowers of remarkable size, and varying in colour from the purest white to the deepest purple, and many of them are deliciously scented. This improvement has been brought about by those plants bearing the most perfectly-formed and best-coloured blooms being yearly selected and placed by themselves for seeding purposes, a way in which the strain is annually improved in quality. Some growers sow *Cyclamen* seed in January, and grow the plants on rapidly through the summer, to form flowering plants in 6-in. pots by the following August, only nine months elapsing from the time of sowing to that of blooming. C. W. S.

VIENNA.

PUBLIC gardening and planting now being recognised parts of city improvement, any worthy effort in that direction comes within the scope of *THE GARDEN*. Austria has been so unfortunate in recent wars, and is supposed to be in such difficulties financially, that its capital is not, at first sight, one in which great improvements would be carried on at present. And yet not in Paris itself is there greater evidence of healthy change. Indeed, in one respect it is far ahead of Paris, and that is in the building art. Though this is somewhat out of our province, it is, nevertheless, so distinct and superior in Vienna, that it would not be fair to the city to speak of its improvements without noticing the stately houses that border its new streets. Although many of its projected improvements are as yet unfinished—a dozen Pall Malls might be stolen from Vienna and not be much missed. The lover of progress loves to see anything supremely well done, and does not mind if his idols or favourites are dethroned through the victory. He may well be pleased to see that while all the world is very justly talking of Paris and her improvements, Vienna has been quietly beating her hollow as far as buildings are concerned. The poor, cold, zinc and slate roofs of Paris with their pigeon traps on the top are intolerable to the eye fresh from the noble repose, ample and well-lighted upper stories, and rich, low, roofs of even second-rate streets in Vienna. There is something dangerous to the progress of architecture in France, owing to the hard and fast rules which make the streets all alike—alike even in the meanness and narrowness of the houses. The new Continental hotel in Paris has been much talked of for the comfort and sumptuousness of its rooms and fittings; outside it looks like any common building in the Rue de Rivoli, no doubt owing to some rule preventing the architect making his house different from the others—surely one of the most silly rules ever submitted to by an intelligent people. Of course, it is possible to err in the other way, and allow a Hankey to erect a dreadful and over-topping pile right against our most precious public buildings; but a happy mean might be found of allowing as much artistic variety as possible, and only excluding ugliness. In Vienna, while the height in most of the streets is uniform, there is a pleasing variety of style. The great charm, however, is getting rid of the old, high, sloping roofs with their narrow rooms or dens. The upper story is as good as any other, and the roof is at so low an angle that it is not, as a rule, seen from the streets; and when it is seen, being of richly coloured tiles, it is very different from the

poor cold roofs of Paris and London. Our own feeble architects, who apparently try to console us so often for thin walls and poking rooms by turning the roof into a kind of slated cruet-stand, argue that their precipitous roofs of ugly slate are needed in our climate to throw off the wet. Now Vienna is as wet as London and has very much more snow, which often falls there to a depth of 2 ft. and lasts a considerable time; but the architects manage to make perfectly sound and dry roofs, low and very pleasing to the eye when seen. In the old part of the city steep roofs are seen with their many windows in the narrowing roof stories, so that this change, so desirable from a sanitary point of view, has been effected in a place where the steep sloping roof was at one time considered necessary. The public buildings are quite as remarkable as the private houses, there being five important ones now in course of erection, including a parliament house a hotel de ville and two museums.

The disposition of the streets, that correspond in importance to the frequented boulevards of Paris, is excellent, the Ring Strasse being about 150 ft. wide. This width allows of planting abundance of shade trees without interfering with the light or the appearance of the houses. In Paris the trees often interfere in both ways. In the large Vienna avenues there is a wide footway without trees on each side, then a roadway mostly for the use of the house and local traffic, then two lines of trees with a smooth wide footway between them, and then a large open road in the centre for tramway and general traffic. It will thus be seen that the space between the houses consists of three carriage ways and four ample footways and four lines of trees—these forming a shady avenue for pedestrians on each side of the great central roadway. The street planting is of the kind with which we are familiar in Paris.

The public gardening of Vienna is, as a rule, blighted by the influence of the "French" school—the old deadly school responsible for clipped gardens. Schönbrunn and the Augarten are large spaces, called gardens by courtesy, but which are really garden-tombs—wholly devoid of a single quality of a real garden. The good Botanic Garden in one retired corner of the Schönbrunn Sahara modifies somewhat its sad impression; but for unrelieved deadly formalism and gross stupidity of garden design, there is, perhaps, nothing in this world more dismal than the Augarten at Vienna—a noble piece of ground with enormous walls of clipped trees only and long weary walks. Looking up from these walls, a narrow strip of sky may be seen—no more. Between the high green walls there is a mass of attenuated scrub. The space is not only wasted itself, it is not only no garden, but it is so arranged that even the air (so liberal to the waste) cannot enter it freely; and there are no fine views which such an ample piece of ground might show of one of the noblest of cities. The much talked of Prater, a very large surface of ground, is the worst designed of any large park which we have ever seen—no breadth, no repose, no turf, no views, anywhere; even the main drive through it is poor and narrow. As regards the Prater, all has to be done, and if simply and wisely designed it would make a noble park. There is a small English garden and lake laid out in it by a Frenchman some years ago, but such is not the species of improvement required by a park of this character. A few bold and useful roads, wide, airy sweeps of turf, some shade where most required, and many groups and groves of hardy forest trees—the whole disposed by some one with a fine feeling for and knowledge of the elements that go to form the most beautiful scenes of natural sylvan beauty, are what would

make the Prater worthy of so noble a city. Numerous as are the costly stupidities in public gardens, in no other could there be found so poor in all that is essential to healthy pleasure or enjoyment as the Prater, Schönbrunn, and the Angarten. As for the smaller city gardens, they are formed on a different plan, and it is possible in them to see trees and flowers in their natural forms, and also some verdure and variety. One small park, called the Stadt Park, seemed the most interesting; it is well laid out, and has a great variety of trees and fine-foliaged plants and flowers. The most distinct feature in these gardens is the dotting of many plants on the Grass instead of in beds, though there are flower beds too. This is a good system where carried out with some taste and temperance, but one very likely to prove unsatisfactory where left to persons without a keen sense of what is best in such a plan. To succeed with it one should know how to secure great and bold variety while avoiding a mere accumulation of "dots;" should feel the need of keeping ample foreground and sufficient breadth; should have repetition, and should have a delicate knowledge of grouping and placing the various objects, which could only be obtained from extensive acquaintance with plants both in gardens and in a wild state. That such hands were not the authors of much of the grouping here was but too clear; some subjects like Dahlias, of which one or two, or even three, groups or colonies would have looked charming and given character and variety, are repeated in some cases all over the place, so as to produce disagreeable monotony, while many kinds of plants of equal, or greater, importance are wholly absent. The ugliest things grouped in the above way are standard Roses, always offensive unless where the heads become so large and vigorous that one no longer notices that they are standards.

MELON-CUCUMBERS.

Of the immense variety of gourds and other Cucurbits in cultivation, few are known in a wild state, and there is little doubt that they are really the products of cultivation, and never existed



Varieties of Melon-Cucumbers Raised from Seeds of a Melon.

in a wild state. In fact, the same may be said of the varieties of most economic plants under cultivation. By some botanists, including Mr. C. Naudin, who has conducted a large number of experiments in hybridizing members of the Cucurbit family, it has been averred that it is not possible to effect a cross between a Cucumber and a Melon. On the other hand, several supposed hybrids between these two plants have been exhibited or described from time to time, though, perhaps, not one of them is beyond doubt. The three fruits, of which

sketches are herewith given, are the issue of a plant believed to be such a hybrid. The parent originated in Mr. Leclerc's garden at Eprenay. Mr. Leclerc communicated the history of it, together with seed, to Mr. Carrière, the editor of the "*Revue Horticole*." In 1874 Mr. Leclerc bought a Cantaloup Melon at a fruiterer's in Eprenay, and, as it proved a very good one, some of the seed was saved and sown. The first sowing was made in 1876, and of twelve plants two produced fruit resembling Cucumbers. Thinking it was the result of some mistake on the part of the gardener, he had them uprooted before the fruit came to maturity. In the spring of 1877 another dozen plants were raised from the same seed, and Mr. Leclerc was very much surprised at the unusual length of the male flowers borne by three of them. One of these plants was sent to the Comte de Lambertye, and it bore three fruits. One of them was the shape of a hunting horn. It was cut before it was ripe, and it was of a woody consistence with an acid juice inside. The second was shaped like a large Cucumber, much swollen in the middle and at the tip. It was slightly curved, 53 centimetres long by 15 centimetres in its largest diameter. The flesh was pale yellow, slightly sugary, and had the flavour and odour of a Melon, with a decided after-taste of Cucumber. The third fruit was forwarded to Mr. Carrière, who communicated seeds of it to various distant friends with the request that they would cultivate some of them and watch the result. This fruit was very much curved and attenuated at the base, and 71 centimetres long by 10 centimetres in its greatest diameter, and weighed about 5 lb. The skin was smooth, or here and there very slightly rugose, thin, very delicate, and of a rather deep yellow when ripe. The flesh was yellowish-white, passing into pale red towards the centre of the fruit, quite melting, very juicy, and having a very decided flavour of Melon, though leaving a bitter after-taste in the mouth. Seeds of this were sent to various persons, among others to Messrs. Vilmorin, and the progeny varied considerably, as the illustrations show. The surface is more or less smooth or ribbed, greenish-yellow, passing into a butter-yellow when ripe, and the flesh relatively thin, and of the nature described above. Whether of hybrid origin, or the result of natural variation this is a very interesting phenomenon. One of the most singular facts connected with it was the production of normal and abnormal fruits from seeds out of the same fruit.

W. B. HEMSLEY.

Tomatoes.—I have just now a houseful of these which have been in full bearing since last July. They are growing, flowering, and setting just as freely as in the middle of summer. We use them occasionally for dessert; in fact, I find them to be a most useful addition to our winter supply of forced vegetables.—R. GILBERT.

The Negro French Bean.—I have been forcing this variety of French Bean for the first crop, and find that it produces at this dull cold time of the year larger pods than any I have yet tried. It likewise sets well. The next variety which I force as a succession to it is Osborn's Winter Forcing, another excellent sort for early forcing. With Canadian Wonder for the latest crop, a better selection than the above could not be made where a good supply is required during the winter and spring months.—WILLIAM TILBERRY, *Welbeck*.

Skeleton Leaves.—Three cases of "skeletonised" leaves were shown at South Kensington last summer by Mrs. Cousins, of Southport, and the following note concerning them is given in the Society's journal just published:—"For the dissection of leaves I find the process of maceration too long and tedious, to say nothing of the uncertainty as to the results. I have therefore adopted the use of alkali in saturated solution, the specimens to be introduced while the liquid is heated to boiling point. The time of immersion to be regulated by the character of the various leaves, and the nature of the epidermis to be removed. When the specimen is freed from epidermis and cellular tissue, it must be subjected to the action of chlorine to destroy the colouring matter. The introduction of peroxide of hydrogen serves not only to render the lace-like specimen purer in colour, but preserves it also. In destroying the colouring matter of Ferns this is likewise invaluable; added to the chlorine it gives a solidity to the bleached fronds, and appears to equalise the action of the chlorine. For skeletonising capsules the slow process of maceration by steeping in rain water is alone available—a moderate heat may be applied to hasten the process, but alkali is useless. Skeletonised leaves and capsules appear to gain in the process a toughness and durability not possessed by them in their natural state."

PROPAGATING.

CONDITIONS UNDER WHICH GRAFTING IS BENEFICIAL.

We sometimes think that these are not so general as may be imagined. In fact, if it be true, as physiologists tell us and cultivators believe from practical experience, that a reciprocal action exists between the root and top of a plant—that the one is pretty much what the other makes it—then it follows that if we graft a weak-growing Vine, for example, upon a vigorous stock, and only permit the development of leaves and branches on the scion, the stock must eventually lose its superior vigour to a great extent, if not wholly, and the Vine will be no better off than if it had been on its own roots. Perhaps a little may be allowed when the stock, in addition to being more vigorous, is also of a harder constitution. And, so far as I have observed, this is exactly what happens in the case of grafted subjects. Under equal conditions a Black Hamburgh Vine makes better roots, and more of them, than a Black Hamburgh stock that carries a top of some weak-growing Vine only, and this when both roots and stems were equal to begin with. Neither does the girth of stem of the two increase at the same rate, but the Hamburgh thickens faster than the grafted scion. This is a more important question than at first appears, for it affects the whole question of budding and grafting. Some years ago, it being supposed that a certain new Vine (the Muscat Hamburgh) succeeded best when grafted on the Black Hamburgh, nurserymen laid hold of the idea, and plants were advertised guaranteed to be worked on the Hamburgh stock at the outset. Seemingly, however, the plan did not lead to any great results, for it was not long heard of. Let me here state that I am not now speaking of grafting with a view to check the vigour of the top, as is the object in the case of the Quince stock, but the reverse. Practically I have not turned my ideas on this subject to much account, except in the case of Vines, and I am not the only one who has noticed the fact in regard to these during the last two years; but it is now more than ten years since I gave up the practice of employing strong-growing Vines simply as stocks for weaker sorts. On the contrary, in order to get the full benefit of the stock employed, I have allowed it to produce fruiting limbs as well, and have made the grafted sort only one limb of the tree; but mostly we have grafted the Vine half-way up the rafter, the bottom portions bearing the fruit and leaves of the stock, and the top the grafted Vine, thus preserving the native vigour of the stock by its own growth and foliage, and imparting the same to the grafted portion. And it seems to me this is the only way to get the full benefit of grafting. It may be that a stock wholly deprived of its own foliage may never entirely lose its inherent vigour and vitality by being made to carry a top of a naturally less vigorous habit; but facts go to show that it is at least greatly enfeebled.

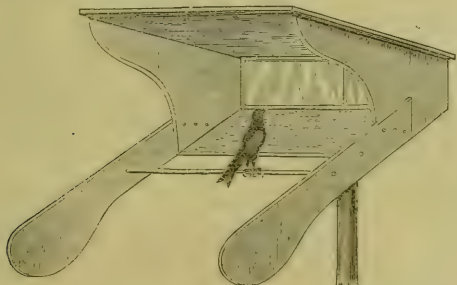
I have chosen the Vine to illustrate my meaning clearly; but, as I said before, it is a question affecting other budded or grafted subjects as well, and particularly Roses. We have rather extensive plantations of Roses here, which have been added to and made up at intervals during the last fourteen years, and nothing has struck me more than the comparative growth of the Brier stocks on which the different varieties are worked. Our soil is naturally a Brier soil, and we have many whole, half, and quarter standards on that stock, and have been able to note the effects of the growth of the Roses upon the thickening of the Brier and the production of roots, and my observations bear out in a very remarkable manner what I have stated in regard to the Vine. Roses which years ago were received with Brier stems all of the same thickness, being newly budded, of course, have altered very much since then. Brier stems on which strong-growing varieties of the Rose were worked have been much increased in girth, and produced plenty of roots, while the stems of weak-growing sorts have made proportionately less progress and correspondingly few roots. Some sorts, indeed, that do not appear to thrive in our cold and exposed situation, have not thickened perceptibly in the stock: all, nor made any roots worth mentioning. We have lately gone over our plantations, and planted 200 fresh plants in place of poorly-growing sorts and to make up blanks, and I have been particularly struck with the facts I have stated, and which I have doubt can be corroborated by other Rose growers. In short, wherever we have a strong-growing kind of Rose—like Gloire de Dijon, for example—we have a strong Brier stock and plenty of roots, and *vice versa*, thus showing that the stock is completely under the control of the top, whatever may be its character. Such facts lead one to doubt Dr. Lindley's dictum that "species which are naturally delicate become robust when 'worked' on robust stocks," when, at least, the growth of the scion only is permitted. Indeed, the doctor's own teachings on the subject of vegetable physiology prove such an hypothesis to be wrong.

If the views I have expressed be correct, then some of the pruning and other cultural practices at present followed must be wrong. For instance, in the case of the Rose, when suckers from the Brier stock push below the graft, we call them "robbers," and always rub them off as a matter of course; but do such growths really do harm, and might they not be advantageously encouraged in some cases? I put this question to Rose growers and others experienced in such matters, as I think the question is well worth considering. My own opinion is, that a moderate encouragement of growth from the stock, as near the graft as possible, would encourage a weakly Rose or feeble-growing variety to increase its vigour and improve its flowers; or perhaps the same end might be gained in a better way by budding vigorous and weak-growing Roses on the same stock. I am aware the generally accepted opinion is, that the stronger growth robs the weaker one; that was my own opinion once, and I am prepared to admit that in some cases such an opinion may be correct; but, as a rule, I believe a weak or feeble-growing branch is encouraged, and, to a certain extent, upheld by the stronger one when the latter happens to be near it, or on the same leading trunk. In other words, we do not improve the chances of a weak or sickly limb by cutting away all the stronger growths in order to divert the vigour and sap into the weak one, but which is a very common practice; the strong branch keeps up the vitality and the circulation, and the weak one shares in it. This is distinctly exemplified in the case of variegated plants, upon which we have tried the experiment purposely years ago, and always with the same results. Some plants, like the *Cyperus alternifolius variegatus*, *Alcascia macrorrhiza*, *Alyssum variegatum*, *Mangles' Variegated* and *Flower of the Day Pelargonium*, &c., frequently sport to the pure white form, producing whole limbs and leaves without a speck of green upon them, and which grow as freely as the healthy green parts of the plants while the latter remain; but cut the green leaves and shoots away, and the white limbs perish in a very short time, thus showing that their very existence depended upon the welfare of the healthy branches. I apprehend that a similar sympathy exists between a weak branch or a strong one, as in the case of the rose and other plants. In short, the fact appears to me to be indisputable, that when we graft a plant upon a foreign stock, and the scion only is permitted to grow, the stock, after it has lost the inherent vigour it brought with it at the beginning, becomes little more than a channel of communication between the top and the soil, depending quite as much upon the scion for its existence as the scion does upon it, or more.—"Field."

Propagating Oaks.—In making a few remarks on the fine quality of Acorns which I saw the other day in a nursery, and which had come from the south of England, I was told by the nurseryman that seed from the south, and especially from France, was preferred, as it invariably produced the finest and largest plants. The Acorns gathered in this part of Yorkshire, he said, produced plants about 9 in. high, while those produced from seed from the south of England were as strong again, and those from the French seed still stronger. The fact is perhaps familiar to nurserymen, but it has an interest for gardeners as well. The question is, is it the size of the kernels or their more perfect maturity that is productive of the extra vigour, and are the results permanent? Is the difference in growth noticeable after the first year or two? If it be due to the size of the seed, one would think the difference would not be lasting; but if due to more perfect maturity, it might. I am inclined to think that bulk of seed has more to do with it than ripeness. About here Acorns ripen well and vegetate freely, but they are from one-half to two-thirds smaller than those which come from the south. In garden culture I am not prepared to say that large seeds produce the best or most fruitful plants; but there can be no doubt that the best-ripened seeds do, a fact which is pretty well illustrated in the case of the Melon and Cucumber for example, and Beans and Peas, &c. Not only do they vegetate more readily and surely, but the vigour of the plants is much greater. It is not to be inferred, however, that partially immature seeds are incapable of producing plants. The chief difficulty with these is that they do not vegetate freely; but, when they once begin to grow, any leaf which they make adds to the prospect of their becoming healthy plants, as they then begin to make roots on their own account, and soon become independent of the support derived from the seed. I have often nursed weak Melon plants, from poor or ill-ripened seeds, into good, healthy specimens by extra care, when I had little more than two very imperfectly-developed seed leaves with which to work. By keeping them near the glass, and in a comfortable temperature, the pale and sickly leaves get greener and stouter day by day, and when the first rough leaf is made they are out of danger. This care is not often necessary, of course, but I have had to practise it now and then in the case of new sorts.—J. S. W.

FOOD-BOXES FOR OUR GARDEN SONGSTERS.

DURING the inclement weather which preceded Christmas Day, lamentable accounts were heard of the great mortality amongst small birds, especially in the north of England; and the well-known ornithologist, M. O. Morris, and others appealed to all lovers of the feathered tribe to repay the debt owing for many a sweet song by throwing the half-starved minstrels every day a handful of crumbs. The latter, it was pointed out, should always be strewn about on the same spot, and, by preference, among the bushes. If, however, the winter is a severe one, the crumbs may be speedily hidden by a fall of snow, and the work of clearing the feeding-ground will have to be repeated again and again. To save this trouble, and make sure that the birds are able to partake of the repast offered them, Mr. Brunzel, of Breslau, recommends the use of a food-box employed by the Vienna Animals' Protection Society, and represented by the annexed woodcut. The special feature of the box is that its open end always turns to the opposite direction from which the wind and snow are coming. The food is thus naturally protected against the latter, and the birds find shelter from the cold. With respect to the construction of the apparatus, the box and two wings (intended to act as sails) may be made of $\frac{3}{4}$ in. deal boards; the back, to allow the crumbs to be seen better, should consist of glass, and the top or roof, projecting a little beyond the sides, slant down to it. The position which the box ought to occupy when placed on the spindle attached to the upper end of the support is indicated in the engraving, and, as regards height from the ground, this will vary, according to the situation, from 3 ft. to 5 ft. or more. If, as is desirable, the box receive two or three coats of paint, all



Food-box for Birds.

bright colours must be avoided, and, on account of its gloss, of course, no varnish should be put on. A greyish or dull green is, perhaps, the best colour.

T. S.

REMARKABLE OAK GALL.

THE various galls on plants caused by insects, especially by those of the family Cynipidae, have much interested naturalists and others, varying as they do so much in form and structure, and often assuming very attractive and curious shapes, as in the Bedeguar of the Rose, and several of the galls on the Oak. Among the most remarkable with which I am acquainted is the gall that I am about to describe, which has recently been brought to my notice. It is produced on the cup of the acorn of an Oak. Referring to the annexed figures, which are drawn somewhat larger than nature, one giving a front view and the other a side view of the gall, it will be seen that a series of elongated, rather flattened and pointed, slightly curved lobes, go forward from a point on the outside of the acorn cup, and spreading right and left clasp the cup and the acorn so as to leave but a small portion of either exposed to view. The gall appears in the specimens which I have examined to spread very regularly on each side of the point from which it springs, and to form lobes corresponding to each other in size and shape, giving the whole one uniform character. The substance of the gall is internally hard and

somewhat corky, and when dry of a dull, yellow-ochre colour, which is also the prevailing colour of the whole gall. Externally the surface is either rugose and pitted, or in places smooth and leather-like. One specimen of the gall entirely covered both the cup and acorn, so that only the apex was visible. A specimen which I broke open had a large, elongated, hollow chamber, smooth inside, in one of the larger lobes, in which was the cocoon of an insect of a very regular, oval shape, $\frac{1}{4}$ in. long, and about $\frac{1}{8}$ in. in diameter. This cocoon had a hard, even case of the same colour as that of



Oak Galls.

the gall. I have tried to find specimens corresponding with this gall in the metropolitan collections, but have failed, except it be one in the British Museum which much resembles it. It is there called the gall of *Cynips calicis*. This gall is probably referred to in Rothschild's "Insects" (fig. 211, vol. III), where, at the end of the article *Cynips*, he says, "Another species, the *Cynips calicis*, pierces the calyx of the young acorns, the deformed fruit of which develops into leaves super-imposed on each other and curled up," and there is in the "Entomologist" for August, 1878, p. 182, a gall figured under the same name which has so much in character with the gall here figured that I have every reason to think that both have the same origin and are produced by *Cynips calicis* (Burgsdorff).

Worthing.

W. W. S.

A PEEP INTO A PARIS FLOWER SHOP ON ALL SAINTS' EVE.

On a dull, wet evening (Oct. 31st, last year) I wandered into a flower shop not far from the Madeleine, my friend H., an enthusiast about flowers, wanting to purchase a Tree Carnation which had attracted his notice the day before. H., with the caution of a true Englishman, is of opinion that foreigners, Parisians in particular, invariably ask nearly double the proper price for their wares, and that it is a duty to himself and his travelling countrymen to beat down these shopkeepers to what he thinks the right sum. Although he speaks of this as a stern duty, I think it is not an unpleasant one, and that he rather enjoys the process. The little shop itself was quite a picture; it was a bower of Palms, Ferns, and plants in bloom. Pots of white Lilac, Roses, Pinks, and Carnations, shed a delightful perfume. Two or three girls were occupied in making bouquets and garlands, while the presiding deity, a stout, middle-aged woman, with a good-natured face, waited on customers, at the same time superintending the workers. While H. was bargaining with her for his Carnation, I watched the packing of a large box, which contained a cross, a wreath, and a cushion of flowers. The last, about 8 in. long and 6 in. wide, was composed of double Neapolitan Violets, with here and there a white Rose bud. The cross, which was about 2 ft. long, was made of white Roses and Carnations, with a delicate edging of Myrtle sprigs; the wreath was of the same flowers, mixed with knots of Violets. The packer was placing these most carefully in a deep box, and arranging them with thin lathes, so that they were perfectly firm and did not touch each other. "What are you going to do with these lovely flowers?" I inquired. "Monsieur, they are to be sent off to Rheims to-night to Madame de F. We received particular orders that they should be there early to-morrow morning. She lost an only daughter about this time last year; she was but 18, and we were to make the cross and wreath of white

blooms, but these Violets were so fine that we thought a few bunches could not be amiss. What does Monsieur think? "*Allez vite Nicole, tu seras en retard*," anxiously exclaimed the mistress, who had been bestowing a somewhat divided attention on H.'s wants. "The price," said she, turning to me, "of the wreath, cross, and cushion, is 75 francs. Are they not lovely?" I answered truly that I had never seen any arrangement of flowers before which pleased me so much. "These," continued she, "will be placed on the grave of Mdlle. de F. early to-morrow; perhaps Monsieur, though an Englishman, will remember that we decorate our graves for the Toussaint! We have been sending out wreaths and crosses all day, but none so lovely as these." I could not help remembering the burial scene in Cymbeline, when the two brothers are bearing the disguised Imogen to her rest. (It is always a relief to my mind to know that she is not really dead, though this somewhat interferes with the pathos of the lines):—

With fairest flowers,
Whilst summer lasts, and I live here,
I'll sweeten this sad grave: Fidele, thou shalt not lack
The flower that's like thy face, pale Primrose, nor
The azure Harebell, like thy veins; no, nor
The leaf of Eglantine.
Yea! and farred Moss besides, when flowers are none,
To winter ground thy corse.

W. N.

ANSWERS TO CORRESPONDENTS.

Mysiphyllum asparagoides.—I should be much obliged if you would give me directions as to the treatment of *Mysiphyllum asparagoides*, and at what heat it should be kept?—S. W. C. [It should be grown in an intermediate house in a temperature of, say from 55° to 60°, and its shoots should be allowed to twine themselves up pieces of string, or netting strained closely under the glass. It succeeds best in a well-drained soil consisting of turfy loam or peat, or both, with the addition of a little sand and decayed leaf mould or manure.—S.]

Cypripedium spectabile.—How can I best succeed in growing this handsome Lady's Slipper?—H. C. [Plant it in a moist but well-drained, sandy soil in a sheltered position, or you might grow it in pots or pins in the greenhouse, in which case use good fibrous loam, leaf mould, and sand, and let the pots be well drained.—S.]

Early Melons.—As a rule every gardener has a favourite Melon of his own, but "J. W." (p. 34) may place every confidence as regards obtaining an early crop of Melons in Gilbert's Improved Victory of Bath (green fleshed) and Williams' Paradise Gem (scarlet fleshed). Both force well, set freely, and are excellent in quality. For a second crop in a hotbed frame Golden Queen (green fleshed) and Read's Hybrid (scarlet fleshed) are equally good.—J. SMITH, *Waterdale*.

— "J. W." (p. 24) should grow Sutton's Hero of Bath as an early scarlet-fleshed kind.—It is first-class in all points; and, for an early green-fleshed variety, there is nothing better than Heckfield Hybrid which that variety can be obtained true. For frame culture Hero of Bath and the old Egyptian (green flesh) are suitable kinds.—H. W.

— Let me recommend "J. W." (p. 24) to grow Eastnor Castle and Read's Scarlet Melons both for his pit and frame crop. We have grown many varieties, but have found none better than these, all things considered.—CAMBRIAN.

Plants for Carpeting Bulb Beds.—The following list of plants named in order of merit will answer "J. S.'s" purpose (p. 24) admirably, viz., *Sedum glaucum*, grey; *S. lydium*, green; *S. acre elegans*, pale yellow; *Saxifraga rosularis*, silvery-white; *S. hirta*, green; *Antennaria tomentosa*, white; and *Herniaria glabra*, green. All are surface rooters, and look equally well in summer and winter.—W. W.

Smuts from Turnips and Chinnies.—"A. E." (p. 24) would find coke more economical than coal, and much the best way of getting rid of the smut nuisance of which he complains.—W. W. H.

Aster-growing for Market.—How do market gardeners grow Asters so as to send them to market in bloom in pots?—H. H. C. [They sow the seed in heat in spring, harden off the young plants when up, and plant them out, after all danger from frost is over, in rich ground in an open situation, mulching the ground in hot weather to keep it moist; then, when wanted for market, they are lifted and potted.—S.]

Fungi in Mushroom Beds.—The fungi growing in the centre of "T. S.'s" Mushroom bed belong to *Agaricus virgineus*, a common occupant of Mushroom beds. The explanation of your case is simple. The unwelcome fungus delights in half-decayed manure equally well with the Mushroom itself. As the spores of the first are commonly floating in the air, whenever they happen to light on a well-prepared Mushroom bed they are sure to grow. Such cases are common, and we have frequently known the Mushrooms to be completely ousted by the new comers.

Nettles Under Trees.—Nettles soon succumb to repeated cutting down of their tops, or a still more effectual way of dealing with them is to dig the ground which they occupy, in winter. It need not be turned over very deeply, and the few that will sprout up in the ensuing spring can be easily destroyed with a hoe or fork. Of all the plants of a peren-

nial character which come under the denomination of weeds, I do not recollect one less difficult to eradicate than Nettles, a fact easily accounted for by their being much more impatient of disturbance at the root than plants of a like description. On open ground there is absolutely no difficulty with them. I once had a dense bed occupying a considerable space simply dug over, not trenched, with a little manure previously spread on the surface and worked in as the ground was turned over. It was planted with Potatoes in the beginning of April and produced one of the best crops I ever saw, the roots of the Nettles decaying being just the thorough sort of material in which Potatoes luxuriate. All who have plenty of luxuriant Nettles may rest satisfied that they have some good land. The common British species (*Urtica dioica*) wherever I have seen it has invariably been located on good soil.—T. BAINES.

Baits for Field Mice.—Allow me to assure Mr. Harpur Crewe (p. 24) that I am not too comprehensive when I add the short-tailed field mouse to the kinds which I have succeeded in capturing with nut kernels. A year ago I was annoyed by having the fruit of *Psidium Cattleianum* and *Eugenia Ugni* under glass carried off as fast as it ripened. I set my traps, the falling kind, the best I think ever invented, and secured the delinquents; they proved to be a pair with short tails. This species in severe weather feeds on the smooth bark of trees. Last winter I had a large *Jasminum revolutum* destroyed, through their devouring the bark from the collar upwards 18 in., and I noticed during the late severe frost that they were attacking some large plants of *Aralia Sieboldi*. They will also, I believe, mount the highest Apple and Pear trees in order to get at the best fruit. By the way, I fancy bank vole is a misnomer, as, if I am not mistaken, it always makes its nest in the open fields, selecting a dry spot in which to burrow, and from which, beneath the herbage, its run ramifies right and left, frequently extending long distances. I quite agree with Mr. Crewe's remarks about owls and should like to see his wish become the law of the land. They are the farmers' and gardeners' best friends, but are regarded generally as their direct foes. I have several here and value them as ornithological treasures, far above the game, but I find it difficult to protect them from the prejudiced around me.—J. M., *Charmouth, Dorset*.

Treatment of Tuberous-rooted Tropæolums.—There should be no difficulty in inducing these Tropæolums to flower. If your correspondent's plants are now growing freely they will soon be showing their bloom buds. They should stand in a light, airy position in a cool house, or in the window of an apartment where a fire is not continually maintained, and where air can be admitted in favourable weather. If grown in heat or in confined quarters, they seldom flower satisfactorily. During the next two months water should only be given when the soil is quite dry, but when fully established and coming into flower, they will, in warm weather, need copious moistenings. When in bloom, shade them from the hot sun, and sprinkle the path and stage, which will have the effect of prolonging the blooming season. Growth is apt to be a trouble some, and if not promptly exterminated, it will turn the foliage yellow and completely paralyse the growth.—J. CORNHILL, *Bijfleeet*.

Names of Plants.—*Anon.*—We are unable to satisfactorily identify the leaf, but probably with more material, such as a flower, it would be an easy matter.

Questions.

Pine-apples.—What is the best structure in which to grow Pines? And what is the best material in which to plunge them? Also, what is the best soil for Pines where no proper loam can be procured?—A GARDENER.

Rheum officinale (Baillon).—Will some one of your correspondents who have access to the best authorities kindly point out the differences, if any exist, between this plant and the so-called *R. palmatum* tangutensis? The difference is not without importance for seed business, as in one trade list from an eminent firm the two plants are offered as distinct and at very different prices. In another catalogue, from a house equally reputable, they are offered as synonymous. Which is right?—W. T. I.

The Short-tailed Field Mouse.—We used to have here several establishments of the barn owl which were carefully preserved, but, for some unexplained reason, they have left us, or been shot in their foraging expeditions in the neighbourhood. Since the disappearance of the owls my rock garden has suffered severely from the ravages of both the long and short tailed field mouse, especially the latter, which now swarms here, and which we find most difficult to trap. Not content with the *Cistus*, dwarf *Genistas*, and other low-growing plants, it has cut off the Japanese Honeysuckles down to the ground and done a great deal of damage. The barn owl is invaluable as a destroyer of mice, and is the natural provision made for curtailing the numbers of these mischievous little animals. I entirely agree with Mr. Harpur Crewe, and think every man who kills a barn owl ought either to be fined or otherwise punished. The most casual observation would convince any one of the services rendered to man by this harmless and useful bird.—ALFRED ELLIS, *The Brand, Loughborough*.

A Substitute for Holly Berries.—We have not had a single Holly berry during the whole of the late festive season, but we have several large red-berried *Solanum* plants covered with fruit which we have cut freely, and the small branches, when mixed with evergreens in wreaths, &c., have an excellent effect.—CAMBRIAN.

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SATURDAY, JANUARY 18, 1879.

[Vol. XV.]

"This is an art
Which does mend Nature: change it rather: but
This Art ITSELF IS NATURE."—*Shakespeare.*

ROSE SOILS AND ROSE STOCKS.

"If I had only a good Rose soil, I have no doubt I could grow good Roses," is an exclamation one often hears from those who have been unsuccessful in their culture; but it is a mistake to suppose that such a soil is absolutely necessary even for those who grow for exhibition, for one of our most successful amateurs has only a light sandy soil, and yet he can produce flowers which gain for him silver cups and prizes; at the same time, it must be confessed that a good soil is a great help to good Rose growing. The rich, unctuous loam of Hertfordshire and Hereford, of Slough and Colchester are just the soils in which the Rose delights; but it is accommodating, as the luxuriance with which it grows in many a cottage garden, diffusing its fragrance all around, testifies, while, as we know, the wild Rose throws up its vigorous shoots in all soils and in all situations. One sees it on the shores of a Scottish loch, resting deep in the moist peat; on the wild moorlands of Ireland, in thin, gravelly soil; or in the rich hedge-grows of our English counties, in deep, loamy soil; and although in all it seems to flourish, yet it is in the latter that it is especially at home. Hence, no one need be discouraged at the thought that their unsuitable soil prevents them indulging in their love for the Rose. Bearing in mind, then, the character of the soil it especially likes, we must endeavour to remedy any defect so as to approximate to it. Where soil is light and rich, loam or even clay must be added to make it more tenacious. My own garden is of that character—a rich, alluvial soil, in which well-nigh everything will flourish; but the Rose does not like it, and hence I am obliged, with some considerable difficulty to get loam from a distance to add to it. Where soil is too stiff (not very often the case) it may be made lighter by the addition of ashes, as well as manure; but the chief difficulty is with light, not heavy soils. I need not insist upon thorough drainage where the soil is very heavy; stagnant water about the roots is death to the Rose; for although it will bear a great deal of moisture, it will not tolerate insufficient drainage. Many of our older varieties of Roses may be had on their own roots, and there is no doubt that thus they flourish best; the Moss, Cabbage, Gallica, and other summer-flowering Roses are all better as dwarf, compact bushes, but it is a different matter when we have to deal with the Teas and Hybrid Perpetuals. In the southern parts of England the Teas do well out-of-doors, and will stand the winter with but little protection, but in the colder parts of the island this is impossible. The Hybrid Perpetuals, having the blood of various races in them, are some of them more tender than others; and although they are in some instances grown on their own roots, yet in perhaps 99 cases out of 100 they are grown as budded plants, and the question has been hotly debated, Which is the best stock to use? A great impulse was given to Rose growing by the introduction by the late Mr. Rivers, about forty years ago, of the Manetti Rose from Italy, and for thirty years it has held almost undisputed sway as a stock for dwarf Roses. Standards are still grown, and, as far as one can see, must be grown on the Dog Rose. Thus, one large Rose grower is said to bud 250,000 Manettis every year, while of 12 acres grown by another more than 11 acres are under the Manettii. Of late years, however, a reaction has set in, or rather, to me say, a fresh candidate for favour has arisen in the seedling Brier, long used by the French Rose growers as a stock for their Teas and Roses, but of late years brought prominently into notice by Mr. Prince, of Oxford, who grows it exclusively, and uses it for Rose of all descriptions. It has rapidly come into favour, while cuttings of the Dog Rose are used by other cultivators, the fact being realised by both that the Dog Rose has its disadvantage; its roots are few, and in a light soil it

has a bad tendency to send its underground shoots a long way off, and thus take from the vigour of the Rose which is budded upon it; but with the seedling Brier this is to a great extent obviated. A careful excision of the eyes before planting will prevent them throwing up suckers, and I have in my own Rosery plants on the seedling Brier which have been there three or four years, and I have never seen a sucker on them. They root most profusely, and, consequently, give vigour to the Rose without overpowering it. It is also later, so that where there are both Manetti and seedling Briers grown, the Rose season is prolonged. It must be borne in mind, too, that there are some Roses which do but indifferently on the Manetti which flourish on the seedling Brier. Roses such as Henri Ledechaux, Capitaine Christy, and others of the Victor Verdier type, beautiful in appearance, but generally scentless, succeed well on it, while for Tea Roses its importance cannot be over estimated. Many of these the Manetti by its great vigour absolutely kills, but they flourish to perfection on the seedling Brier. Other stocks, it may be mentioned, have been used, such as Celinc, Napoleon, De la Grifferaie, and Garland, but they are practically nowhere in the estimation of the Rose grower; the three named, the wild Brier for standards, and the Manetti and seedling Brier for dwarfs, being those which are most generally used. The experience of the past year has also somewhat tarnished the reputation of the Manetti in another way. Complaints have been made, and not without reason, that excessive wet causes its roots to rot. In my own light soil even I have found this to be the case, while from growers in all parts of the country one has heard the complaint that their Roses have died. In some instances hundreds of Roses have been dug up and consigned to the back settlements of the garden or to the rubbish-heap, for, as a well-known Rosarian wrote to me, Roses are so cheap now that it is of no use trying to recover wounded ones; better get in fresh, healthy plants to supply their places.

I think that it may be taken for granted that in getting in plants it is well to consider the soil and climate both of the place where the Roses are to be grown and also from whence they are brought. To transfer Roses from the mild climate and loamy soil of a southern county to the bleak climate and hungry soil of a northern county cannot but be fraught with disaster; and, therefore, it is far better, if it be possible, to get Roses from some one near at hand, where the climatic conditions are the same, and those of the soil nearly so.

I have thought it well to write at some length on the subject of stocks because I am sure that much of the disappointment experienced by the owners of small gardens arises from the fact that they do not consider these matters; they order at haphazard from a nurseryman, and are contented to receive good-looking plants without at all considering whether they are likely to thrive with them, what their soil is, or what the stocks on which they are growing. If, as in other matters, they were to take into consideration their own position and then try and get their Roses to suit that position, they would not so constantly mourn over the fact that they cannot get their Roses to succeed.

DELTA.

WHITE ROSES.

The most beautiful and recherché of all white Roses is Niphetos. This is one of the oldest of the Tea-scented Roses now in cultivation, for we find it described in the first edition of Paul's "Rose Garden," published in 1848. In the period of time from that date until the present moment, which has witnessed the disappearance of so many hundred kinds of Roses, after trials of long or short duration, Niphetos has more than held its own, and is daily increasing in popularity. To the exhibitor it is a tried and trusty friend, for where is the stand of flowers that would not be enriched and ennobled by the presence of one of its grandly-shaped, snowy, wax-like blooms? It is the admired and sought-after of all amateurs, whilst with the florists, who grow Roses for the sake of selling the flowers in the market, it is the backbone of their culture. Naturally a moderate-growing Rose, Niphetos may, with plenty of heat, be made to produce shoots of a stoutness and length that will bear comparison with the growth of any of the non-climbing varieties of the Tea Rose. Where large quantities of bloom

are required this seems to be the secret of success in growing it, and it is under a system of cultivation, carried on by means of a large degree of heat and moisture, that the thousands of flowers of this variety are produced which certain firms are continually pouring into the markets of London and other large towns. We would, therefore, recommend amateurs to bear this in mind, and if they have a warm corner in their Rose house let them reserve it for a plant of *Niphetos*, which will well repay them for their consideration. Other valuable white, or nearly white Roses, in the Tea-scented section, are *Alba Rosea*, *Julie Mansais*, *Madame Hippolyte Jamin*, *Madame Villermoz*, *Marie Guillot*, *Rubens*, and *Sombreuil*, all first class, but possessing withal the characteristic tenderness of their race, which renders the cultivation of all Tea Roses not devoid of risk, except under favourable circumstances, such as on a wall facing south, or on a well-sheltered border with the same aspect. Nearly allied to the Tea Roses are the Chinese or Bengal, and of these *Ducher* and *Mrs. Bosanquet* are the best whites. Amongst the *Noisette*, or autumn-blooming cluster Roses, *Aimée Vibert* and *Madame Massot* are pretty white Roses, especially valuable for climbing. The white Hybrid Perpetual Roses may be roughly divided into two sections, the one with a preponderance of *Noisette* blood, and the other comprising varieties of various parentage, and whose origin is not so clearly recognisable. The former, which may be termed *Noisette Perpetuals*, are chiefly characterised by a dark, shining foliage, the disposition of the flowers to come in clusters, and the tendency of the blooms to be more or less tinged with pink at the edges. The best of this section is undoubtedly *Boule de Neige*, and closely following it are *Louise Darzens*, *Baronne de Maynard*, *Coquette des Blanches*, *Madame Alfred de Rougemont*, and *Madame Noman*. *Coquette des Alpes* occasionally produces splendid flowers, but cannot be relied upon. Newer kinds of this class are *Perle des Blanches*, *Perfection des Blanches*, *Olga Marix*, *Mlle. Annie Marie Cote*, and *Madame François Pittet*. The other section of Hybrid Perpetuals includes the well-known *Madame Lacharme*, a splendid Rose in hot, dry summers, and the nearest approach we have to a white *Jules Margottin*; *Mlle. Bonnaire*, *Impératrice Eugénie*, *Elise Boëlle*, and *Mrs. Bellenden Ker*, the last a beautiful white Rose, the best of the Bonnaire family, but one which seems to have been overlooked by the majority of cultivators. These four Roses do well on the Brier, but poorly on the *Manetti* stock; their flowers are, however, of incomparable beauty. *Queen Victoria*, too, is a fine old white Rose, easy to grow; *Marquise de Mortemarte* is good as a pot Rose, but out-of-doors hard to manage, being very delicate; *Mabel Morrison*, if, as described, a white *Baroness Rothschild*, must surely be an acquisition. Amongst the Bourbon Roses and their hybrids, *Comtesse de Barbanthanne* is grand in autumn, and so are the trio, *Acaladie*, *Queen*, and *Souvenir de la Malmaison*, although none of them are pure white. Autumn is their flowering season, and from August onwards until the advent of frosty weather they will furnish a constant supply of beautiful blooms. We must admit, however, that it is amongst the summer-flowering kinds that the most gorgeous and effective of all white Roses are to be found, and unexcelled in this respect are the Hybrid *Noisette Madame Plantier*, and the *Damask Madame Hardy*. These two Roses will form huge bushes as dwarfs, and immense heads if grown as standards, in a manner that none of the autumnal Roses can approach, and during their season of flowering they present a dense and unbroken mass of white of dazzling purity and brightness. *Miss Ingram*, as a summer-flowering Rose, is good in some seasons. The best white Moss Roses are *Comtesse de Murinais*, *Reine Blanche*, and *White Bath*; these flower in summer only. Perpetual White Moss produces beautifully-mossed flowers in autumn as well as summer. The *White Provence*, or *Unique*, is a pretty summer flower, as is also the *Alba*, *Madame Legras*. As climbing or running Roses, the *Ayrshire* and *Evergreen* families furnish us with some good kinds, such as *Bennett's Seedling*, *Dundee Rambler*, and *Queen of the Belgians*; *Donna Maria Rampante* and *Félicité Perpétue*; whilst the white *Banksian* may be got to climb, and produce in profusion its fragrant blossoms on a south wall, at the foot of which may be trained the *Macartneys Marie Leonida* and *Alba simplex*.

The Nurseries, Waltham Cross.

ARTHUR W. PAUL.

PLANT CULTURE IN MARKET GARDENS.

SHOW PELARGONIUMS.—Both show and zonal Pelargoniums are grown, perhaps, in larger quantities than any other market plants; the uses to which they may be applied are so numerous that there is always a demand for them. Early in the year, their blooms are valuable, and later on the plants are required for window-boxes, flower gardens, and small greenhouses. One of the largest growers of show and fancy varieties is Mr. Beckwith, of Tottenham, who sends to market yearly from 80,000 to 90,000 plants of both kinds. Cuttings of these are struck as early in spring as they can be obtained and potted on until they occupy 5-in. and 6-in. pots. They are given a little heat and abundance of air night and day when the weather will permit, and are copiously watered whenever they require it. The only kind of stimulant used in this great plant factory—for such it may be called—is soot water, which is applied at different degrees of strength, according to the stage of growth in which the plants may be. This has the effect of expelling worms from the soil, and imparting to the foliage a green, healthy appearance. The first batch of plants, which consists of early-flowering varieties, comes into bloom in February and March, and others are brought on in succession, the last being usually disposed of by the end of June. Few of the plants exceed 12 in. in height; they are, however, remarkably bushy, and furnished with large, healthy leaves down to the pot, and every shoot bears noble trusses of finely-developed blossoms. One of the principal kinds used for early-blooming is *Red Gauntlet*, a kind which I once saw covering a back wall of a lean-to house, from 10 ft. to 12 ft. high, and 120 ft. in length. The pots in which the plants were growing were plunged in the border, and the roots had long ago passed through the bottoms of the pots into the soil below them. The shoots were tied to the wall, and at nearly every season of the year abundance of bright-coloured blossoms could be gathered. During March and April the amount of bloom was simply wonderful. Little attention was paid to the plants beyond clearing off decayed leaves and tying in the shoots occasionally. A dark variety named *Bonnie Charlie* is also used for forcing. Its habit of growth is not particularly good, but its flowers are of a rich dark, velvety crimson, and old plants of it, when kept liberally supplied with water, grow and flower all the year round. *Beauty of Edmonton* is also an excellent kind, the flowers having a fringed edge similar to those of the well-known *Dr. Andry*. In colour they are brilliant crimson, and are more conspicuous than those of any other variety. Mr. Hayes, another great grower, at Edmonton, never subjects his Pelargoniums to any fire-heat whatever after the plants are rooted, except during very severe weather. Abundance of light, air, and water is given them, but they receive little in the way of stimulating manures of any kind. Nevertheless, the foliage is very large and beautifully green, and almost conceals the pots. The flowers, too, being produced without forcing, last for a much longer time than those on plants that have been subjected to strong fire-heat and stimulating manures. Some growers of Pelargoniums place good, bushy plants of early-flowering kinds into large pots during summer and keep their blooms regularly picked off, by which means the plants yield a good supply in autumn and spring, when flowers are greatly wanted. Others cut back their plants after they have done flowering in August, and, as soon as they break afresh, pot them and place them in a gentle heat, keeping them well supplied with manure water, and, thus treated, they continue to bloom all through the winter and

spring. A fine double-flowered show *Pelargonium*, named *Dr. Masters*, which originated with Mr. Reeves, of Acton, from a sport from the old *Fire King*, is one now much prized for its faultless habit of growth, its wealth of deep green foliage, and its abundance of maroon-crimson flowers, which last for a much longer time in a cut state than those of any other market kind. Among other good varieties may be named *Digby Grand* (of the *Dr. Andry* type), *Triomphe de St. Mande* (crimson), *Duchess of Bedford*, and *Empress of India*.

ZONAL PELARGONIUMS.—These are largely grown by nearly all market gardeners who have *Vineries* or other fruit houses; they profitably occupy such houses whilst the fruit trees are at rest, and they are cleared out before the shade of the trees interferes with them. In many places, also, houses are wholly devoted to zonal *Pelargoniums*, and, in that case, they are often made to serve two purposes; they furnish an enormous amount of cut blooms during winter, and make neat, compact, and well-flowered plants with which to decorate the balconies and window-sills of London houses during summer. *Vesuvius* and *Master Christine* are the kinds grown in the greatest quantity; a few white-flowered kinds are also grown, but on these very little value is set. Pink bloom is less sought after in the market than scarlet, and there is also less demand for the plants in summer. Cuttings of *Pelargoniums* for winter blooming are struck in June, potted into 5-in. pots when well-rooted, and freely exposed to the sun and air by being placed in an open spot out-of-doors. Towards the end of September, when the weather begins to be showery and cold, the plants are removed to the houses in which they are to flower, each one being placed on an inverted flower-pot close to the glass, and sufficiently distant to allow of a free circulation of air amongst them. This prevents the leaves and blooms from damping off during wet and sunless weather. The plants are potted in good sandy loam, all kinds of manure or leaf-mould being avoided, as these only promote rank and vigorous growth at the expense of bloom. The great point aimed at is to get the wood hard, short-jointed, and well-ripened as early in the autumn as possible, and, in order to accomplish this and keep the plants dwarf and compact, no more water is given them at any stage of their growth than is absolutely necessary to keep them in a healthy condition. When placed in the houses, a dry atmosphere is maintained by means of hot-water pipes and free ventilation. Should any of the plants show a want of vigour, they receive a little guano water, which soon improves their condition. The flowers are gathered regularly every evening, and by the same person, who takes great care never to cut a bloom one day that would be improved in condition by being left until the next. As they are gathered, they are placed in shallow trays, carried by boys on their heads, and are at once conveyed to the packing shed to be gummed. This process is likewise performed by boys, who, with a finely-pointed stick, deftly drop the smallest possible quantity of prepared gum into the eye of each blossom; this keeps the petals stiff, and prevents the flowers from falling to pieces. When gummed, they are packed in boxes ready for market, where they fetch from 9d. to 1s. per dozen trusses, according to size and quality. Notwithstanding that hundreds of dozens of trusses are gathered weekly, *Pelargonium* houses in January present a display of bloom little inferior to that in the flower-beds in the metropolitan parks in the middle of summer. As soon as *Pelargonium* blooms become plentiful, market prices for them fall considerably; the plants are then cut

back and prepared for their summer duties. The cuttings taken off are struck in boxes, and sold, as in the case of *Calceolarias*, &c., to the trade for bedding purposes. The cut-down plants, when again established and full of bloom, are taken to market, where they fetch from 5s. to 9s. per dozen. Some growers have rather a different practice. They strike their cuttings in autumn, grow them on in good sandy soil, keep them in houses, and then pot them in 6-in. pots; the bloom which they produce during winter is, as in the case just stated, cut for market, and in April and May, when the plants are in full flower, they find a ready sale for furnishing large vases and for planting out in beds in which immediate effect is desired. The shoots are stopped during the growing season in order to make the plants bushy, and, when coming into bloom, liberal supplies of manure water are given them. Larger specimens are obtained from cuttings inserted in spring; the shoots of these are regularly pinched in, and in the following spring large, bushy plants furnished with fine spikes of bloom is the result.

COLOURED-LEAVED PELARGONIUMS.—These have hitherto been but little grown for market; lately, however, a few growers have taken them in hand, and find no difficulty in disposing of well-coloured plants at remunerative prices. The principal part of the propagating is done from January to March; but it may be said to be always going on. The cuttings consist of points of the shoots taken off when the wood is ripe, firm, and just starting into growth; if they have four leaf-joints, that is sufficient. These are put into 2½-in. pots, and afterwards shifted into 3-in. pots, in which many of them are marketed. Many of the commoner varieties are planted out in nursery beds during the summer to provide more cuttings; these hard cuttings grow into rooted plants quickly. The soil used for the gold and silver *Tricolors* consists of about two parts light loam, one part leaf-mould, with silver sand added; the gold and bronze kinds are grown in a stronger loam with a little well-decayed manure. These plants are grown in ordinary plant houses, light and airy, and, therefore, well adapted for the purpose; but the plants are not kept so near the glass as one might suppose. During winter, a temperature of 50° is maintained, rising to 60° in the sun-heat. Plenty of air is given on all favourable occasions, but during dull weather water is applied but sparingly. Some growers send to market yearly as many as 20,000 plants in 4-in. or 5-in. pots, bushy, and well supplied with ample, richly-coloured foliage. The plants are usually sent to market packed closely together in shallow boxes, each of which holds a dozen or more pots. Both for window ornamentation and for planting in small gardens, these coloured-leaved *Pelargoniums* are eagerly sought after. A few of the best kinds of golden *Tricolors* grown for market are *Peter Grieve*, *Macbeth*, *Lady Cullum*, *Golden Queen*, and *Florence*. These are mostly good growers, and have bold, richly-coloured leaves with good dark zones. Among silver *tricolors* may be mentioned *Lass o' Gowrie* (a capital sort, free, as regards growth, and very showy), *Empress of India*, and *Dolly Varden*. The best bronze or *tricolors* are *Mrs. Harrison Weir*, *W. E. Gumbleton*, and *Marshal MacMahon*.

IVY-LEAVED PELARGONIUMS are also grown in large quantities for draping the edges of window-boxes, and there has lately been raised some beautiful double-flowered kinds belonging to this class which will, when known, no doubt, be largely grown for such purposes, and their flowers are useful for cutting.

C. W. S.

THE FRUIT GARDEN.

PINE HOUSES.

"A GARDENER" (p. 48) may grow Pine-apples successfully in two kinds of structures, one a lean-to, the other span-roofed. We grow them in both, and like the one about as well as the other. Lean-to houses may be of any width and height, but we prefer them from 16 ft. to 18 ft. wide, and about 12 ft. high at the back; a high roof with the plants far from it is undesirable. Such a house as this may have the interior arranged in two ways, either with a bed about 10 ft. wide and a pathway all round, or a pathway along the centre, and a bed at back and front. In this case, the wall of the back bed should be raised 2 ft. above that of the front, so as to keep the plants up near the glass. With this arrangement there should be two rows of 4-in. pipes laid along the bottom of the pathway, with grating above on which to walk; two rows along the front, and two rows along each bed to afford bottom-heat. With the bed in the centre, at least, a double row of 4-in. piping should go all round the house, and three or four rows should be placed in the bottom of the bed. Perforated gratings answer best for cornering over these bottom-heat pipes, but they may be covered with stones or rough rubble, so that the heat may get freely up into the fermenting material. The beds should not be less than 2 ft. in depth, and the flow of water in the pipes should be regulated by means of good valves. In many houses much heat is wasted by not attending to this. I may add that a lean-to house should be placed with its face due south, and a span-roofed one with its ends north and south. A span-roofed house, about 12 ft. high and the same in width, with a 4 ft. bed on each side of the pathway, is a favourite house of mine for Pine culture, but we have grown good fruit in all kinds of houses, the chief requirement being plenty of heat during certain stages of growth. I have entertained an opinion for a long time that Pines in general do not get sufficient water at the root. I would strongly recommend all concerned in their culture who can procure Oak and Beech leaves to store a large quantity of them for plunging and other purposes, such as hotbed making. We collected some hundreds of cartloads of them this winter for such purposes, and when useless for all else they make valuable leaf mould and manure for root crops, &c. At one time we used tan in which to plunge our Pines, but it did no better than leaves, if so well, and as a manure afterwards it is quite useless.

CAMBRIAN.

It will be found, I think, that a hip-roofed house facing due south will answer better for Pines than one of any other form. Such a house will admit back light from the ridge, which should be about 4 ft. in depth. It should have a path beneath occupying the full space, [and a narrow path on the front. The bed devoted to the plants, should be raised sufficiently high to keep them well up to the glass. For plunging some prefer Oak leaves, where these are to be had in quantity, but nothing equals fresh tan, when not ground too fine. Fresh loam is the only soil suitable for Pines, and the better it is in quality the better the results may be expected to be, other cultural details being rightly carried out. I have, however, often seen good useful Pines grown in loam that was far from being such as one would select if better was obtainable.—T. BAINES.

The most suitable structure for Pines is a span-roofed pit, with sufficient piping to keep up the heat to 70° in severe weather, with ample ventilation at top and each side. It should have a bed in the centre, or a walk in the centre and a bed on each side, according to circumstances, with a couple of pipes underneath the bed, which should be regulated by means of a valve. The side ventilators should be opposite the hot-water pipes so as to warm the air as it enters; they should be open a little all the year round on the side opposite the wind, it keeps the atmosphere in motion without allowing the heat and moisture to escape, and the result is sturdy growth and good flavoured fruit. The best plunging material is tan, which should be fresh, but if very wet it should be turned over a few times before plunging the plants in it, as the heat is then steadier and more durable. The bottom heat should never exceed 80° or 85° at most, otherwise the foliage will be long and narrow instead of short and broad, the forerunner of good fruit. A suitable soil is the surface of an old pasture with plenty of fibre in it cut about 2 in. thick, and if in good condition it may be chopped, or, better still, pulled in pieces fresh and green, and it should be mixed with a good sprinkling of rough sand or soft burnt brick broken small. Where top sods are not procurable Pines will succeed almost in any mixture of soil provided it is open and sweet and pressed solid in potting, which leaves less room for water to stand in the pots. Never mix any manure with the compost, but give weak liquid manure regularly, as it has always a tendency to sour the soil and stop the progress of the roots.

J. SMITH.

Waterdale.

LADY BEATRICE LAMBTON PINE-APPLE.

THIS is one of the noblest and handsomest varieties of the king of fruits which has yet been obtained. It is one of about thirty seedlings raised some years since from the Montserrat, at Lambton Castle, by Mr. Stevens, who was then gardener there; and it has since been proved to be both distinct and desirable by Mr. Hunter. Other distinct varieties of considerable promise, have, we believe, been observed amongst the seedlings, as well as some few which are remarkable as curiosities. We learn from Mr. Hunter that Lady Beatrice Lambton is somewhat taller than the Smooth-leaved Cayenne, and more erect in its habit of growth. The leaves are dark green and prickly at the edge, the spines being strong and widely set, about four to the inch. The flowers are purple. The fruit is very large, pyramidal, from fourteen to fifteen pips in depth, and averaging about 10 lb. in weight (it has been grown to 11 lb. 7 oz.), the individual pips being broad, measuring 1 in. across, plump when properly swelled, of a deep orange colour in the prominent parts, yellow in the furrows, the scales or bracts subtending each pip being of a bright coppery-red. It will thus be seen that it is really both a noble and a handsome fruit. The quality also is of a high order of merit. As regards its flesh and flavour, the former, in the examples we have examined, was of a pale semi-transparent yellow, with soft yellow fibres towards the firm axis or centre, and exceedingly tender and melting towards the circumference. The flavour was rich and excellent, with very abundant refreshing juice. Mr. Hunter informs us that in the case of a fruit of 10 lb. weight, cut at Christmas, 1877, and used for dessert, he poured from the dish when it was brought from table three-fourths of a tumblerful of the syrupy juice, and our experience quite accords with this statement. This very abundant juice is, in truth, one of its characteristic features, and one which points to its great value as a summer fruit. When ripened in spring, it is found to be quite equal to the Cayenne and Charlotte Rothschild; indeed, Mr. W. Thomson, of Clovenfords, states that having often tasted it both in summer and winter, he is of opinion that while it far exceeds in size the Enville, which it resembles in shape, it equals the Queen and Smooth Cayenne in flavour, and in this respect far excels them in winter. Mr. D. Thompson speaks approvingly of its very free fruiting habit, and also bears testimony to its beauty and good qualities, it being, he remarks, "the most handsome Pine in cultivation," and in the winter season "remarkably juicy, and much better flavoured than Smooth Cayenne or Charlotte Rothschild." The fruit grows close down in the heart of the plant, quite the opposite of its parent, which throws its fruit out of the foliage. Various causes, which it is not necessary here to discuss, have conspired to prevent this fine new Pine from being put into commerce at an earlier period, one of which, we learn, is its shyness in producing suckers. Its merit has, from the first, been fully appreciated at Lambton. A sufficient stock has now been obtained to permit of its being offered to the public; and for this purpose it has passed into the hands of Messrs. Ireland & Thompson, of the Cragleith Nurseries, Edinburgh, by whom it is being distributed.—"Florist."

Protecting Fruit Trees.—All small fruit bushes should now be protected from birds. The best material I find for this purpose is white cotton, known as crocheted cotton; it does not break during strong wind as finer material does. It should not be placed in straight lines; on the contrary, the more angles the better, as it is then more difficult for the birds to get between the threads. Until I adopted this plan we never could get a crop of fruit, but since we have done so we have never failed. The trees, moreover, are spoiled by disbudbing, and have to be cut back. For protecting wall trees I use fishing nets and hexagon nets, hanging them from 16 in. moveable coping boards, and supporting them on small poles placed in a slanting direction from the wall. By this means we get good crops of fruit. Last year I tried a new material made of cotton netting, and I find it very useful, not only for protecting trees in bloom, but also for preserving ripe Strawberries from birds, and other ripe fruits from wasps, bees, flies, &c. During the severe frost, too, which we have had I have used it to great advantage in the fruit room.—W. D. Maidstone.

King of the Pippins Apple.—The quality of any variety of Apple is, no doubt, considerably influenced by soil and climate, but this sort, as "Cambrian" says, is generally a free bearer; still in no part of the kingdom that I have either grown or tasted it could it be classed amongst the best kinds for flavour. Cox's Orange Pippin is little inferior to it as a free bearer, and very much better in flavour, and there are a good many others I could name alike superior to it in the last named property. King of the Pippins with me always has been very indifferent, cooked. "Cambrian" possibly may not have the true kind.—T. BAINES.

NEW OR RARE PLANTS.

BROSSONETIA PAPYRIFERA VAR. BILLIARDI.

THE Paper Mulberry (*Brossonetia papyrifera*), which, by-the-by, should be more generally planted in the south and west,



Brossonetia papyrifera var. *Billiardi*.

presents a number of curious varieties of foliage, even in a wild state, and some of them have been in cultivation; others have originated in gardens from seed. The accompanying



A Leaf of *Brossonetia papyrifera* var. *Billiardi*; half natural size.

illustrations represent a curious cut-leaved variety, raised from seed by the late Mr. Billiard, of Fontenay-aux-Roses. It is very near the old, though rare variety *dissecta*, but differs in its more slender branches and less compact habit.

W. B. HEMSLEY.

Paraffin as an Insecticide.—As yet I have had no occasion to use this oil for killing insects, but if it be half as good as it is said to be it would be difficult to overrate its value. If it kills insects so readily it will also, I should say, prevent them from appearing, and, acting on this principal, we are this winter putting a little paraffin in all the water with which we wash Vine rods and Peach trees, also in the water with which the houses are cleansed, and in the mixture with which any of them are painted. I do not think any one who wishes to guard against insects during the coming season could do better than adopt this plan.—CAMBERIAN.

THE INDOOR GARDEN.

WINTER GARDENS.

Nothing is more pleasing in the whole range of gardening, than the effects which may be produced in a tastefully arranged and well-kept winter garden. We are therein enabled to give some slight idea of the general aspect of tropical and other vegetation. The preconceived and popular notion of a winter garden is a roomy, lofty structure, wherein Palms, &c., grow to tree size. This is so far correct; such a structure represents a perfect winter garden; but it is equally certain that the same principals which serve to guide us in the arrangement of large houses are applicable to smaller structures, the furnishing and keeping of which will entail but a moderate outlay. It is scarcely necessary to dwell upon the uses and advantages of a winter garden; its name sufficiently indicates the end and aim of its existence, a place of resort when inclination, health, or weather forbids wandering far from home. One of the prettiest winter gardens I ever saw was very small; it had been built for a lady in infirm health, and was attached to the house. In it was nothing rare or tender, but the subjects were suitable, tastefully arranged, and the hands of the owner herself kept them healthy and clean by means of frequent washings and spongings. Many an hour was thus pleasantly spent in the exercise of a loving care, which had its reward in the bright appearance of the plants. Winter gardens may be placed in two categories, viz., those in which heat is only applied to exclude frost, and those wherein a regular temperature is maintained. It will naturally be seen that the plants used for the two places must be somewhat different in character. In the former we must rely upon the inhabitants of temperate climes, but which we cannot well grow the year through in the open air in this country, such are some of the *Aracarias*, some *Palms*, also, *Ferns*, *Camellias*, *Azaleas*, *Acacias*, &c.; in the latter we get a great variety of subjects, and are enabled to impart a strong tinge of tropical verdure to the arrangements by employing *Palms*, *Pandanads*, *Streitzias*, *Brownias*, &c. The great mistake made in winter gardens is overcrowding; it is just the same here as in outdoor planting, thinning is not done in time, and the whole degenerates into a weary tangle; ultimately something must be taken away, with the result of more fully exposing the debilitated specimens.

Now, let us suppose that we have a house to arrange—anything between 12 ft. and 20 ft. in height, and some 20 ft. wide by 40 ft. long. This, it will be seen, is not a large house, but it is spacious enough to allow of the specimens acquiring handsome proportions. Starting from the entrance—or, if the interior be commanded by any of the apartments of the dwelling, we must commence there—we should in the first place have before us an open breadth of green turf (*Selaginella*), which is truly beautiful when well kept. Towards the far end I would arrange the water, if such is to be introduced; and I would always have the limpid element therein if possible. But here a word of caution: unless a constant supply of bright fresh sparkling water, such as a fish might thrive in, can be assured, do not attempt it, as nothing is more repulsive and dismal than dirty stagnant water. Hardly second in importance is the shape and arrangement of the water basin: anything formal—having the appearance of a large cup sunk in the ground—must be avoided. The rockwork should be so arranged as to occupy about one-half of the water margin, and must be planted here and there with trailing and drooping plants, *Ferns*, &c. The edge of the water basin should also be studded with plants that will serve to break its monotony—*Maidenhair*, *Hare's-foot*, and other dwarf-growing *Ferns*; *Ficus repens*, *Tradescantia*, &c., will serve admirably to drape the lower portion; whilst the upper part may be studded with hardy *Cacti*, *Cobweb Houseleek*, and some kinds of plants which do not need constant moisture at the roots. Do not run into the too common error of building a rockwork without making ample provision for the growth of plants thereon. Shallow pockets, containing some 3 in. or 4 in. of soil, are of no use whatever. Anything planted therein to remain permanently will, as soon as the soil is exhausted, exhibit a meagre and unsatisfactory appearance. The roots should be

able to work their way freely downwards, so that they may be continually finding fresh nutriment. In adjusting the various portions of the rockwork, fissures should be therefore left so that there is no hindrance to the attainment of these conditions. This care is all the more necessary where air is freely admitted into the house, as there is then great difficulty in supplying sufficient moisture when all the roots are near the surface. At the back of the rockwork, and so placed that it spreads and overhangs the same, some such graceful-habited plant as an *Araucaria excelsa* or a Palm should be planted. Spreading away from each side, Tree Ferns, *Dracenas*, Bamboos, and such free-growing ferns as *Pteris arguta* and *Nephrodium molle*, should be so arranged that they have space enough in which to develop. The walk will naturally run round the building, and should be made to wind in such a manner that the borders and corners are of unequal dimensions. This will allow of the arrangement of sundry little groups, each one having a character of its own, and will at the same time afford ample opportunity for the placing of single specimens. Should there be a dead wall, which, if the house be connected with the dwelling, will probably be the case, it should have affixed to it some neat trellis-work, and for covering the same I do not know of any thing better than Camellias. They lend themselves well to this kind of work, and the green is so lustrous and deep that, if they did not possess the additional merit of furnishing exquisitely beautiful flowers, they would on that account alone be invaluable for our present purpose.

A few climbing plants are desirable in a winter garden; it is here, indeed, that they appear to most advantage, and are better enabled to develop their true character than in more confined quarters. There is a good variety of climbers suitable for a cool house: *Begonia jasminoides*, *Lapagerias*, *Cobea scandens variegata*, *Mandevilla suaveolens*, and *Rose Maréchal Niel*, are some of the best; whilst for pillars *Abutilons*, *Rhynchospermum jasminoides*, *Plumbago capensis*, and *Habrothamnus* are all suitable. Flowering plants of all kinds may of course be introduced the whole year through with good effect. If *Fuchsias* are left in the turf, the pots may be sunk; and *Hyalcinths*, *Tulips*, *Violas*, and *Primulas*, &c., will have a very pretty effect thus treated.

The plants above enumerated are all suitable for a structure which is only heated to exclude frost. If a continual warmth is to be maintained, then for the *Camellias*, *Acacias*, *Araucarias*, &c., we must substitute denizens of warmer regions. The arrangements may, however, be conducted in much the same manner as already recommended, only that it should be borne in mind that the more heat the more rapid will be the development of all plants subjected to it. A Palm in a warm house will grow much faster than when kept quite cool, and the growth of tropical plants in general is much more luxuriant than those which come from temperate climes. I have preferred to treat in a more special manner of the cool house, inasmuch as it is better adapted to general requirements than when heat is constantly applied. The latter form of winter gardens demands a much greater amount of attention, and entails more expenditure, than if those plants only are employed which require merely the exclusion of frost. The arrangements detailed herein are not to be considered arbitrary; individual tastes and fancies should be allowed free scope in the way of disposing the plants; but the future career of the specimens must not be sacrificed in order to gain an immediate effect. I have endeavoured to show that the creation and maintenance of a winter garden is not a work involving a vast amount of labour and expense. I have often had an opportunity of witnessing the enjoyment derived from such a structure. In conclusion I may observe that, whatever may be the class of plants grown, there should be no attempt made to force growth, as such treatment will inevitably have the effect of distorting and destroying the symmetry of the subjects so treated. It is better to let Nature develop herself in her own way and take her own time thereto, as, with constant supervision and attention to her wants, she will not fail in the end to reward us for our labour.

J. CORNHILL.

Byfleet.

Begonia hydrocotylifolia manicata.—This is a hybrid between the two species whose name it bears. It has a vigorous,

sturdy habit, flowers freely in winter, and when not in flower the whole plant has a strikingly handsome appearance. Cuttings of it taken off at midsummer, inserted singly in small pots filled with sandy soil, will make pretty little flowering plants by Christmas. A little extra warmth, such as that furnished by a Cucumber frame will be useful for striking the cuttings and giving the young plants a start, but afterwards they will succeed in a warm greenhouse or intermediate house.—E. HORDAY.

TRITONIA AUREA IN POTS AND PLANTED OUT.

If we take the year through till *Chrysanthemums* make their appearance in autumn, there is generally a dearth of orange or yellow flowers wherewith to embellish greenhouses or conservatories, and these are colours that are, perhaps, more telling than any others, especially when associated with scarlet *Pelargoniums*, or the bright blue *Browallia elata*. The latter should be largely grown in every garden, as it is one of the best plants possible for furnishing cut flowers for bouquets or vases, and, by sowing at intervals, it may be had in good condition the whole year round. *Tritonia aurea*, as I have said, associates well with this, and is not half so well known as it deserves to be, for, besides being exceedingly effective, it is a plant that is very easily cultivated, all the shelter or protection which it requires when grown in pots being that of an ordinary cold pit or frame, in which it thrives better than in any other situation. If kept in any place where the air gets dry, red spider is sure to attack its flag-like leaves, and, once this pest effects a footing, the health of the plant soon fails. Probably its liability to be attacked by red spider is one of the reasons why it is so seldom seen in gardens, but if those who have hitherto failed with it will only keep it entirely out of dry houses until it comes into bloom, they will not have the least difficulty with it, for it is of such a hardy nature that it will live and thrive well planted in any sheltered border where the soil is moderately light and well drained. For purposes of cutting, this is by far the best way of growing it, as then it entails no labour in watering, and is much more floriferous than when restricted to the limited area of a pot. A row we have of it, planted close to the foot of a low south-west wall, affords great quantities of bloom, and saves running to the greenhouse, and all the preparation which we made for it was digging in a quantity of sand and leaf-mould, so as to lighten the soil, and keep it in a loose, open state. In this the plants spread and travel underground, somewhat resembling in this respect the Couch Grass. The mistake which many make in growing *Tritonia aurea* is drying it off; this its pseudo-bulbs will not bear, as they are not sufficiently large or fleshy in themselves to keep alive, unless the soil be moist.

The bulbs being at present comparatively dormant, now is the best time to get them, or to set about dividing and planting or potting them. If grown in the latter way, 8-in. pots are the handiest and most suitable; they should be drained with a few crocks, and over these some of the roughest portions of the soil should be placed. A mixture of peat and loam in about equal proportions suits them best, but either will do alone, the latter especially, if it be fresh and fibry. As they look best in a mass, from twelve to eighteen bulbs will be required for pots of the above-named dimensions, and these should be of the largest that can be picked out, and be regularly distributed and covered to the depth of about 2 in. This done, the next thing is to give them a soaking of water to settle the soil, when they will at once set to work in forming fresh roots, and till they have made plenty of these and some top growth the soaking in question will afford sufficient moisture to carry them on, as, till they get well into leaf, they absorb but little, and are injured if kept in too wet a condition. As before observed, a cold frame during their earlier stages of growth is the best place for them, and, if plunged in ashes so as to prevent frost reaching their roots, little, if any, covering beyond the glass will be needed, unless severe weather sets in. After the middle of May or so it is a good plan to plunge them outdoors, as then the genial rains and refreshing night dews help much in keeping the foliage clean and free from red spider. An occasional syringing and abundant supplies of water as growth progresses and summer advances will be

found to suit them perfectly. As soon as they begin to show bloom they may be taken to the greenhouse or conservatory and arranged so as to produce the best effect. As the flowers fade the right course is to lessen the water supply, but not to that degree as to bring about actual dryness, the only object being to ripen and rest the plants previous to potting, an operation that should be performed as soon as the foliage shows signs of decay. Any spare or weak bulbs or suckers that may be showing themselves will then come in for planting in any position similar to that previously alluded to; in doing so they should be put in at a depth of about 5 in. or 6 in., and the surface of the soil should be coated over with Cocoa-nut fibre or [?] decomposed leaves, both of which are capital non-conductors, and keep out frost better than anything else.

S. D.

HEATING AND VENTILATING IN COLD WEATHER.

I was pleased to see (p. 30) Mr. Fish's remarks upon this subject, for it is a most important one. Much loss of fuel is annually sustained from over anxiety to keep fires going briskly in frosty weather. There are two sources of heat for warming glass houses, viz., the sun and the fire, and these should aid, not run counter to each other. The sun, of course, we cannot influence, but on a bright frosty morning we can anticipate his rising, by an hour or two, and discount, so to speak, his warmth, by checking the fire sometimes leaving the sun his proper share of work to do. To keep fires burning briskly when the sun is shining brightly, no matter how sharp the morning may be, is not only a waste of fuel but in many cases may do positive harm. When the warmth from a bright sun meets the heat from a brisk fire under a glass roof, it is next to impossible to maintain a genial atmosphere in the house. In many cases all the fruit houses are crammed full of bedding plants in winter and spring, and they must be kept secure from frost; the least amount of fire-heat will effect this, and it should be turned off altogether the first thing in the morning. I am of opinion that in the ventilation of glass houses in winter and spring, some means should be specially employed to make the cool air from the outside, whenever it is necessary to admit it, pass over the heating apparatus, or, if this cannot be done, then cover the open spaces with canvas or something similar that will act as a respirator in breaking up and distributing the cold currents; air, when disseminated, causes little or no draught when entering a building, but I agree with Mr. Fish that if the fires be kept down, but little ventilation will be required, especially in large houses. Small houses heat more rapidly and require more attention, both in the management of the fire and also in ventilating. As regards cool houses, devoted at this season mainly to the sheltering of plants for open-air decoration in summer, if the houses be kept altogether closed, on bright days, even if very frosty, a vapour will be raised inside by the sun's warmth, and I think it always best to give enough ventilation to induce this to escape rather than allow it to become condensed and drop amongst the plants. The proper management of fires for horticultural purposes is an art that requires much painstaking thought. There are two main principles that must be insisted on; the first is thorough cleanliness about the boiler, and the second is the careful management of the draught of the fire, so as to insure just the right degree of combustion and no more. Wherever the smoke passes round the boiler, there soot will accumulate, and the waste matters of combustion are sometimes carried forward by the draught of the fire. There should therefore be periodical cleaning and scraping of all boiler flues, so that the heat of the fire may come into direct contact with the iron surface of the boiler. The furnace doors should fit properly, or the draught cannot be regulated, and unless this is carefully attended to, a good deal of the heat may escape up the chimney and be wasted. In heating horticultural buildings a liberal outlay for piping in proportion to the work to be done will be found true economy. Iron pipes, if not severely strained, wear out but slowly; but if the apparatus has to work at a high pressure, in order to maintain the requisite amount of temperature, there will come a time when something—either boiler or pipes—will give way, and the period of the greatest trial will be during severe frost, when a disorganised heating apparatus is always a source of danger and annoyance. Besides the greater danger of a mishap to an overworked apparatus, there is the unhealthy character of the scorching heat to contend with, and all who have had to work such apparatuses know that it is a great mistake, both from a cultural and economical point of view, to stint the amount of piping.

E. HOBDAY.

Hebeclinium inthanum.—To the casual observer this plant has the appearance of an enlarged variety of *Ageratum*, and its

flowers do bear some resemblance to those of that family, both in structure and colour, but it has a shrubby habit, and flowers naturally in winter. As it is so easily cultivated, and supplies a colour that is always scarce, it ought to find a place in every collection. It is generally classed with stove plants, but it succeeds perfectly in an intermediate house. A little extra heat during the time of growth will be beneficial, but when in flower it may be moved to the conservatory, and, in a dry atmosphere, its large clusters of violet-coloured flowers last a long time in perfection. It will succeed in fibry loam and peat, with a sprinkling of sand, and it flowers best when not over potted. Cuttings made of its half-ripened wood strike freely in bottom-heat, and pretty little blooming plants, one year old, may be had in 5-in. pots, or, under good culture, large, handsome specimens may be produced in from two to three years.—E. HOBDAY

THE FLOWER GARDEN.

CARPETING BULB BEDS.

THE necessity for covering beds planted with Dutch or other bulbs, especially sorts which make scanty foliage, is so obvious that carpeting them with something green does not require recommendation. These bulbs are planted near the end of October or in November, and until their foliage begins to show itself aboveground early in spring the beds are simply a bare blank. To remedy this there are many dwarf plants which may be planted thickly between the lines of bulbs, or planted so as to cover the surface of the beds through which the bulbs may push their leaves and flower stems as they happen to come up. The best plan is to adopt a kind of double planting, first filling up the beds with bulbs as may be determined upon, say with Hyacinths or tall Tulips in the middle, banding them round with dwarfier Tulips, Crocuses, Anemones, or other bulbs. The place for the bulbs should be marked off in lines, either straight or curved, according to the shape of the beds, planting the bulbs with a dibble; after inserting the bulbs leave the holes open over them so that their exact positions may be seen; then proceed to plant the carpeting plants in single or double lines between the bulbs, according to the size of the plants used. The planting of these effectually fills up the holes made for the bulbs, and one dressing of the surface is sufficient for all. It is necessary to remark that in planting between or among rows of bulbs, varieties of plants must be used suitable to the size of the foliage and colour of the flowers of the bulbs, as, for instance, the plants which would suit among beds of Hyacinths or Pottebakker Tulips would not suit amongst Snowdrops or Scillas, and, again, attention must be paid to the colour of the flowers of the carpeting plants, inasmuch as both they and the bulbs will be in bloom at the same time. For instance, the effect of blue Hyacinths would be entirely spoiled by having a carpet of some purple-flowering plant beneath them. Fortunately for spring flower gardening there are no lack of dwarf plants with flowers of all shades of colour suitable for our purpose. Suppose the centre of a bed is filled with blue Hyacinths, the surface of the bed may be carpeted with *Gnaphalium lanatum* in a very ready way at the same time as the bulbs are planted by simply taking off cuttings of the *Gnaphalium* with four or more good leaves attached to them and dibbling them between the rows of the Hyacinths. It will be found that not a leaf will be lost, and the cuttings will soon be rooted plants covering the bed well before the Hyacinths are in bloom. Of course, in the absence of rooted plants, which are preferable, or in the absence of rooted and prepared plants of *Arabis alba*, cuttings of this showy spring plant may be inserted in the same way with the certainty that they will all be rooted by spring and will flower profusely. If the variegated variety of the *Arabis* be used so much the better; these same plants will also answer amongst red Hyacinths. Among red and white Hyacinths the dwarf, early-flowering *Viola Blue King* answers well, as do also *Aubrietia purpurea*, *A. deltoidea*, and the variegated form of *A. purpurea*. These may be planted in much the same way as the *Arabis*, only in tufts instead of single cuttings; but good-rooted tufts properly prepared are the best. These plants may also be used for carpeting among the taller Tulips, such as the Potterbakers, *Rex rubrorum*, *Canary Bird*, and others. *Aubrietia græca* is likewise specially suited among the tall white

and yellow Tulips as it is taller than the other Aubrietias. Another pretty plant for carpeting among white Hyacinths or Tulips is *Silene pendula compacta*, sown in July and not grown into over large bunches on a dry, poor soil. In planting all these low-spreading plants, care must be taken that they are not buried in the ground; a mere pressing on the surface will be sufficient planting, with a little fine soil just spread over their roots. A very small amount of roots seems to be sufficient to keep them in the best of health, a fact not to be wondered at when it is seen that dense cushions of them spread and hang over rocks sometimes several feet from the point where the roots are anchored in the ground. For carpeting among the dwarfier bulbs, such as *Scillas*, dwarf Tulips and Snowdrops, or rather for alternating with them in lines to cover the ground in winter, we have Daisies red, white, and pink, and the variegated *Bellis aubuefolia* (a single form of which, by the way, grows abundantly among the Grass here), and a very dwarf, floriferous, and double red kind called Rob Roy. But among the prettiest dwarf flowering plants for low carpeting in spring are the prostrate *Phloxes* amongst which P. Nelsoni is quite a gem, as, indeed, is P. frondosa and P. reptans; it is necessary to have these well prepared and grown into little patches. *Veronica repens*, *Omphalodes verna*, and *Gentiana verna* are also all suitable carpet plants among the dwarfest bulbs. Other plants might be named as spring flowering, but which could scarcely be classed as carpeting plants, such as *Iberises*, *Alyssums*, *Hepaticas*, and *Primroses*: these are more suitable for massing by themselves than for carpeting among bulbs. But there are numbers of plants which may be classed as non-flowerers suitable for carpeting the edges of beds among dwarf bulbs, or, indeed, among any bulbs. Of these there are the various hardy Sedums, such as *S. lydium*, *S. glaucum*, *S. corsicum*, *S. rupestre*, and the *Saxifrages*, such as *hypnoides*, *hirta*, *rugularis*, *pectinata*, *Andrews*, *longifolia*, and a pretty one called *capillipes*.

In order to have a good stock of all these plants at the right time, they ought to be increased by division in autumn or very early in spring, and planted in nursery beds on a dry bottom, and properly attended to as to watering and cleanliness until they form compact tufts that can be lifted with balls when required, or they may be increased by means of cuttings inserted about the end of October in sandy soil in cold frames, from whence they should be moved to nursery beds in spring, selecting some moist situation not over exposed to the sun, so as to grow them quickly into patches. For carpeting among Lilies, *Gladioli*, *Crown Imperials*, and other tall-growing bulbs, the same plants may be used and allowed to remain permanently in the ground; to this list may be added all the *Violas*, which amongst themselves include endless variety, and several of the *Mimuluses*; such kinds as *M. moschatus* and *Harisoni*, *cupreus*, and the larger hybrid sorts, make good carpeting plants on soil suitable for Lilies. The large-foliaged *Saxifrages* also come in well for this purpose, such as *S. oppositifolia*, and among the tallest Lilies *Saxifraga crassifolia*. These are plants which do not root very deeply in the soil and which in winter may be lifted with the spade in thin sods or patches, with a thin slice of soil attached to their roots, until the border or bed is dug or renovated, when they may be returned to the same place again.

W. D.

Dublin.

PERMANENT PLANTATIONS OF CANNAS.

I AM pleased to find some of your readers giving us the benefit of their experience on this subject, as I believe that when it is generally known how easily Cannas may be grown, their culture will be undertaken by many who have hitherto been deterred by the supposed difficulties attending it. Those who are interested in this matter will feel indebted to Mr. Sisley (p. 36) for the list and description of varieties furnished by him. Referring to the question of permanent plantations of Cannas, I may state that the only reason I had for doubting the advisability of retaining them after the second year arose from the fear that, owing to the exhausting character of the plants the soil would become too much worn out to admit of their successful development. It is, however, evident that this little difficulty may be overcome, and I now think that by the exercise of a little judgment Cannas may be planted out to remain in one spot for an indefinite period. In the first place good drainage

would have to be provided; a row of drain tiles through the bed, with the necessary outlet, or a layer of rubble would make this part of the affair efficient. Then the soil would need some special preparation; in fact, the same care should be exercised as in making a Vine border. This may appear to involve a considerable amount of labour, but it must be remembered that Cannas last several years, and will need very little labour to be expended upon them afterwards. The work may also be best accomplished at that season of the year when there is the least amount of ground work to do, and the beds would be ready to be planted when required. In winter they would, of course, need protection, and some provision might be made for throwing off surplus moisture. In spring a dressing of soil might be gently forked in, and in the growing season thick mulchings combined with copious manure waterings, would insure their full and hearty development. One of your correspondents remarks, that when left in the ground the young growth is apt to get nipped by frost; some Hazel rods bent over and covered with mats would, however, effectually insure them against such a mishap. By adopting these precautions there would not be much danger of their perishing, and it would be a boon to many if they could be left in the ground for a series of years, thus obviating the necessity of annually propagating and planting. Portions of the pleasure grounds, which are necessarily bare in the summer, would thus be agreeably furnished without taxing in any perceptible manner either the time or resources of the ground. The system is worth a fair trial, and, if successful, would enable the grower of fine-foliaged plants to decorate his garden at little expense. The ordinary routine of summer bedding entails considerable labour and anxiety, and anything which will tend to lessen either the one or the other must be welcome alike to the amateur and professional gardener.

J. CORNHILL.

NOTES AND QUESTIONS ON THE FLOWER GARDEN:

The Paris Daisy.—This plant, which is, in reality, no Daisy at all, but a species of *Chrysanthemum*, is very popular about Paris, and is extensively grown there and in many other parts of France. To a casual observer it has rather a common appearance, the flowers much resembling those of the Ox-eye Daisy, but it associates remarkably well with many other plants. It is of such a wiry, enduring nature, that it will flourish and flower profusely in the poorest of soils, and in the hottest and driest of weather. It would doubtless be found useful in this country on parching sandy soils, where many of our flower garden plants refuse to grow well. In Normandy it is much prized as a pot plant, and finds a ready sale in rural towns for window and room decoration, for which purpose I have found it very useful. If kept growing on for several years in succession it assumes an arborescent form, and in this state it is very effective either placed in the centre of a bed, with dwarf-growing plants around it, or grouped with other flowering and fine-foliaged plants.—J. CORNHILL.

Hardiness of Primulas.—Allow me to add my testimony to the hardiness of Primulas, especially P. japonica. Not only did they stand well last winter with me, but they bloomed well in five whorls; they were in good material on a dry rockery, but not protected. P. cortusoides, P. alpina marginata, P. viscosa, P. pulcherrima, P. minima, P. integrifolia, P. sibirica, P. acutis rubra, P. farinosa, and P. denticulata, all appear to be standing the present severe frost. I hope no one will be discouraged by a fear as to their hardiness; few plants are more hardy, if any are, and they are gems we cannot well spare.—J. WOOD, Kirkstall.

Euphorbia Lathyris.—The British *Euphorbia* of which your correspondent speaks (p. 36) is probably E. Lathyris, or the Caper Spurge, a plant which is common in some of our woods and thickets. It is an ornamental plant, and might prove a pleasing feature in both parks and gardens. I have never before heard it called Jacob's Ladder, which is, I presume, *Polemonium cornutum*.—E. JENKINS.

Stobea purpurea.—I can fully endorse all that "A. P." says (p. 36) respecting this beautiful Composite. In the spring of last year I rose a batch of seedlings which, when fit to handle, were potted, the larger ones into 6-in., and the smaller ones into 3-in. pots. In these they grew rapidly, and nearly all the plants flowered, but, being confined to pots, they failed to produce as many blossoms as they otherwise would have done. My plants have proved themselves to be perfectly hardy, and my old plant in the open border is, after the severe frost which we have experienced, as fresh and well as ever, having from six to eight breaks upon it, and what most indicates its hardiness is the fact that it was only transplanted a few weeks before the first frost of the present winter set in.—E. JENKINS, Maida Vale.

NOTES OF THE WEEK

Large White Lapageria.—The largest plant of this which we have yet seen is in Mr. Hanbury's garden at The Poles, Ware. It covers the greater part of the side of a span-roofed house, and flowers freely from May till February. It is planted in a raised bed over the hot-water pipes, and in the height of the season many hundreds of blooms have been counted on it at one time. Opposite this is a fine plant of *L. rosea*, and the two, when in bloom, produce a striking effect.

Seedling Amaryllises.—There will soon be a fine display of these in the Pine-apple Nursery. There is, indeed, a quantity in flower already, and there are 4,000 coming on in succession. They are set under stages or other out-of-the-way places, where they can be kept dry until they show bloom, when they are brought into lighter quarters, and are given plenty of water. Out of such a quantity of seedlings something which will be in advance of existing kinds may reasonably be expected.

Thysacanthus rutilans.—This fine old plant, though met with in most gardens, is seldom seen grown in perfection. In this state we found it, however, the other day in Mr. Hanbury's garden at The Poles, Ware. Plants of it, growing in 8-in. or 9-in. pots, were furnished with numerous branches, with bushy heads of large deep green leaves, and scores of long, streaming racemes of scarlet flowers. Placed on shelves or brackets, such plants have a charming effect for many weeks during winter, and, for hanging baskets, few plants are better adapted. The results recorded are effected by planting young plants in good, rich soil out-of-doors in summer, and lifting them in autumn. Plants struck from cuttings in spring are preferred to old ones, and the growth which they make, compared with those grown continually in pots, is surprising.

Bomarea oligantha.—This has been continually in bloom with me since July last, and its clusters of prettily-spotted, reddish-orange flowers are very handsome. It is a plant that is easily cultivated, only requiring to be kept free from frost. In brighter weather the flowers are much higher in colour than they are now, but they then last in perfection only a fortnight, while now they keep in good condition for a month.—MAX LEICHTLIN, *Baden-Baden*.

Viburnum lucidum.—I cultivate a shrub under this name which is now beautifully in flower. It looks like a robust-growing Laurustinus, but it has much larger and finer foliage, which is of a bright shining green, and quite uninjured by the frost, severe though it has been this winter. There is an evergreen sort, with thick, shining leaves, from North America, of which I do not now recollect enough to be sure of the two being distinct, or whether my specimen is the American sort or not. However that may be, I can assert positively that the plant in question is one of the finest shrubs for forcing with which I am acquainted, and, thus treated, it forms one of the most showy of plants about Christmas time, and, indeed, all through the winter months. There is also *V. rugosum*, a large, round, hairy-leaved sort, which is likewise evergreen. Some of the deciduous *Viburnums* are very fine, both in flower and fruit. Where, for instance, can one find a more charming bush, when covered with ripe fruit, than our wild *V. Lantana* or *Wayfaring* tree. Between Maiden Newton and Crewkerne this charming plant grows along the roadsides on the chalk in splendid style, so fine, indeed, that the wayfarer is often tempted to carry off a bunch of it.—JOHN SCOTT, *Merriott, Somerset*.

Poinsettias at Ware.—There has lately been in Mr. Hanbury's garden at The Poles, near Ware, one of the finest displays of *Poinsettias* which we have seen for a long time. The plants, consisting of fine specimens, each bear from twelve to twenty brilliant heads of floral bracts, and are well furnished with large, healthy, dark green leaves. Such results as these have been obtained in the following manner:—After the plants had done flowering they were put to rest, and early in summer, when they again broke into growth, they were shaken out of the pots and planted out-of-doors in a sheltered situation in well prepared ground. Here they were kept liberally supplied with water till the weather began to get cold in autumn, when they were carefully lifted, potted, and placed in a little heat, and shaded for a few days until root action had again taken place, when they were exposed to the light, and air was admitted to them freely. Under this treatment fine plants are produced, which from November onwards make a grand display in the conservatory. At lifting time, any plants which are rather straggling have some 6 in. taken off their tops, and these are inserted into 4-in. or 5-in. pots, which are immediately plunged in a brisk bottom-heat, where they quickly take root, and form compact little plants, which are very useful for room decoration. The mode of culture here practised might with advantage be followed in gardens where a good display is required in winter, and

the results would be infinitely better than those obtained from pot culture, viz., long single-stemmed plants, nearly leafless, and bearing but indifferently flower-bracts.

Primroses in Covent Garden.—Some out-door flowers seem to have survived the late severe weather; among these are Christmas Roses and the common wood Primrose. The former are to be found in flower in some of the London nurseries, and plants of the latter in full bloom are now offered for sale in Covent Garden Market.

White Clove Carnations in the Flower Garden.—These are grown largely by Mr. Hill at The Poles, Ware, as bedding plants. Young plants are used for the purpose, and these are struck from cuttings in autumn. They are wintered in a temporary wooden frame, and, thus treated, they are far more satisfactory in the flower garden than an over abundance of scarlet *Pelargoniums*, crimson Beet, and similar plants.

Daphne indica rubra.—I have a good-sized plant of this *Daphne*, on which there are from twenty to thirty good trusses of bright blossoms, that fill the house with perfume. So useful is this plant at this time of the year that no greenhouse should be without it.—J. W., *Llanstephan, Builth*.

Lachenalia pallida purpurea.—This is the name given to a handsome purple-flowered form of this useful winter-flowering bulbous plant, now in bloom in the Hale Farm Nurseries, Tottenham. Though not one of the showiest of the *Lachenalias*, it is, nevertheless, a useful variety.

Gesnera Cliftoni.—This is one of the best of the winter-flowering *Gesneras*. It has large, velvety-green leaves, with handsomely-fringed edges. Its flowers, which are produced in great, pyramidal trusses, are brilliant orange-scarlet, and contrast effectively with the foliage. We saw well-grown plants of it in a garden in Hertfordshire the other day, where it is much used for table decoration.

St. Paul's Churchyard Garden.—According to the "City Press," invitations have been sent out from the architect's department of the Corporation to firms conversant with the art of designing public gardens, inviting them to submit designs for the embellishment of the ground around St. Paul's Cathedral. The work will probably, it is said, include improvements of an extensive character, as well as some alterations regarding the outer railings. The scheme in its full details has not, however, yet been finally decided.

Staphylea colchica.—Flowering examples of this hardy shrub, shown by Messrs. Veitch & Sons, at South Kensington, on Tuesday last, attracted much attention, it being discovered that a most valuable addition had been made to our list of plants for winter forcing. Its leaves when forced are of a lively glossy green, and its flowers, which are produced in large trusses on every shoot, are of a waxy whiteness, like those of the *Tuberose*. Besides being attractive on the plants, such flowers will be most useful in bouquets, much better, indeed, than those of the *Dentzia*. It is, as yet, comparatively scarce, but, when better known, it will doubtless be largely grown as a market plant.

Tulips, Lily of the Valley, and Squills.—These form unusually effective objects just now in Covent Garden Market; they are planted in 6-in. pots, and consist of about four scarlet Tulips, six spikes of Lily of the Valley, and a few plants of *Scilla sibirica*, among which are introduced small plants of *Adiantum gracillimum*. Baskets arranged in a similar manner make charming subjects for table decoration.

The French Government has conferred the Cross of the Legion of Honour on Mr. Martin J. Sutton, managing partner of the firm of Sutton & Sons, Reading, as a special recognition of the merits of the exhibits of that firm at the Paris Exhibition, and of the services thereby rendered to horticulture and agriculture. We should add that this is the only instance, we believe, in which this distinction has been conferred on any English exhibitor of seeds at any French Universal Exhibition.

Prizes for Vegetables.—Messrs. Carter & Co., High Holborn, announce the following prizes for vegetables, to be competed for during the year:—Thirteen dishes of vegetables (to be competed for on June 24), to comprise 12 Onions, 12 Carrots, 12 Turnips, 12 Tomatoes, 3 Cauliflowers, 50 pods of Peas, 6 Globe Artichokes, 50 pods of Peas (distinct), 50 pods of Broad Beans, 50 pods of French Beans, 12 Potatoes, 2 Cucumbers (dissimilar), 3 Lettuces (Cos or Cabbage). 1st prize, £7; 2nd, £5; 3rd, £3; 4th, £1 10s.; 5th, £1; 6th, 10s. Four dishes of Peas:—50 pods of Carter's Telephone, 50 pods of Carter's Little Wonder, 50 pods of Carter's Challenger, 50 pods of Culverwell's Telegraph: 1st prize, £3 3s.; 2nd, £2 2s.; 3rd, £1 1s.; 4th, 15s.; 5th, 10s. 6d. For the best fruit of Dell's Hybrid Melon (to be competed for Aug. 26): 1st prize, £3 3s.; 2nd, £1 11s. 6d. 3rd, 10s. 6d.

NOTES FROM KEW.

Stove Plants.—A very elegant and desirable bulbous plant is Hartweg's *Calliphurria* (*C. Hartwegiana*), a member of the *Amaryllis* family. It has rather large globose bulbs, developing from two to four leaves about 8 in. long, with a compressed and channelled stalk; the blade is about 4 in. long and 2 in. wide, lance shaped, and of a deep green colour. The flower stalk is about 1 ft. high, terminated by about six blossoms, borne in an umbellate manner, 1½ in. long, funnel shaped, divisions slightly spreading, and pure white, the tube with a dash of green at the base. It is yet rare in gardens, though not a novelty, as it was first discovered by Hartweg in 1842 growing on the mountains of New Granada, and was, a few years ago, re-introduced in quantity by Mr. Bull. The scarlet-headed *Calliandra* (*C. hæmatocephala*) is a highly ornamental shrub, about 2 ft. high, though, in its native habitat, it frequently attains a height of from 30 ft. to 40 ft. Its leaves assume a bilobed character, each lobe being again divided into about eight pairs of leaflets 1 in. long. The flowers are produced freely in tassel-like heads, about 1½ in. across, consisting of thread-like stamens of a bright red colour, which, together with its elegant foliage, render it very attractive. The cerulean *Cypella* (*C. cœrulea*), a native of Brazil, is a magnificent Iridaceous plant, and it is to be regretted that its beauty, as well as that of its congeners, is so ephemeral. It has bold, sword-like foliage, 3 ft. high, and from about the middle of one of them peeps a cluster of flower buds, which expand consecutively, and are enclosed in a green-pointed sheath. The blossoms consist of six divisions, of which the outer three are the largest and of a deep sky blue, often blotched with a deeper hue; the inner three are twisted upon themselves, their tips are of a rich violet-purple, and the bases of a tawny yellow barred with chocolate. It richly deserves a place in every collection, and is, moreover, a plant of the easiest culture. Bojer's *Euphorbia* (*E. Bojeri*), a native of the same country and introduced about the same time as the well-known *E. splendens*, is far less frequently seen than that kind, though it has much richer coloured flower leaves, which are borne quite as freely. In habit, also, it strongly resembles it, having the same rigid, grey branches beset with sharp spines, from between each pair are produced the short, oblong leaves. It may be needless to remark that the same mode of treatment is applicable to both. The yellow *Barleria* (*B. flava*), an old introduction from Arabia, seems well nigh discarded too, as it is seldom met with, but it is, nevertheless, a very attractive plant, producing its bright yellow blossoms in succession throughout the winter. It is of slender growth, about 2 ft. high, with opposite elliptical leaves, and the flowers are borne in dense, terminal clusters, and accompanied by several sharp-pointed flower leaves. Another little plant remarkable for producing a continuous succession of blossoms is the Mexican *Tetranema* (*Tetranema mexicana*), which grows about 6 in. high, and has closely-arranged oval leaves, from the axils of which are developed numerous flower stalks terminated by a cluster of small Pentstemon-like blossoms mottled with purple and white. Sabine's *Strobilanthes* (*S. Sabiniæ*) once more attracts attention on account of its numerous deep mauve blossoms, which are produced freely. *S. glomerata* has flowers very similar in size and colour, but it is of a spreading, horizontal habit, and its leaves are covered on both sides with silky, crimson hairs. The variety *speciosa* is a great improvement on the type, having larger and more deeply coloured flowers. Both are natives of the East Indies.

Greenhouse Plants.—Foremost in novelty and interest is Walker's *Ainslia* (*A. Walkeri*), an extremely elegant little plant discovered a few years ago growing at a considerable elevation in Hong Kong; it is a Composite, though at first sight very unlike one, and nearly related to the beautiful South American *Mutisia*. It is about 1 ft. high, and has a woody stem clothed on the upper half with numerous narrow leaves, with a few sharp serratures at the margins. The flower heads are arranged in a loose racemose manner on an erect stalk, and consist each of about three flowers, with four narrow, pure white divisions curled in a remarkable way, and with a purplish red column of stamens rising from the centre of each. The green-leaved *Veltheimia* (*V. viridifolia*) deserves a passing notice; it is a capital plant for cool conservatory decoration during winter; it has numerous large deep green leaves wavy at the margins. The flower stalks rise from 1 ft. to 2 ft. in height, terminated by a dense raceme of narrow tubular blossoms 1 in. long, which are, together with the stalk, of a pale flesh colour, and very copiously marked with spots of a darker shade. This handsome plant comes from the Cape of Good Hope, and has been many years in gardens. *Tremandra verticillata* is another excellent plant. It has a neat habit and whorls of narrow leaves, from the axils of which a profusion of rich purple blossoms are borne on thread-like stalks about the size of a sixpenny piece. Resembling it in habit is *T. hirsuta*, which, at a glance, is recognised by the hairiness of its branches

and leaves, as well as by its rosy blossoms. Both were introduced many years ago from Swan River, and the latter is also known as *T. Hugeli*. *Banksia spinulosa*, from the same country, is a remarkable Protead about 2 ft. high, in habit much resembling a dwarf Conifer, as it has needle-shaped leaves arranged in the same manner. It produces dense erect cones of its curious blossoms of a deep orange colour. W.

PLATE CLX.

THE NEW WHITE HYDRANGEA.

Drawn by Mrs. DUFFIELD.

THE new white *Hydrangea*, the subject of our illustration this week, is of Japanese origin. It was introduced to the United States by Mr. Thomas Hogg, an American traveller in Japan, whose name is not new to our readers in connection with Japanese plants. In the summer of 1876, Messrs. James Veitch & Sons, of the Royal Exotic Nursery, Chelsea, were appointed agents for the distribution of the plant in Europe, which commenced in the autumn of that year. In the following spring (1877) this *Hydrangea*, under the name of Thomas Hogg, was exhibited at the shows and meetings of the Royal Horticultural and the Royal Botanic Societies, when it received a first-class certificate from the former, and a certificate of merit from the latter. Its pure white flowers, large trusses, the length of time during which it continues in bloom, and its perfectly distinct character, at once secured for it many admirers. It has also been well received on the Continent, especially in France, where it is cultivated not only in private gardens, but also as a market plant. *Hydrangea* Thomas Hogg is closely allied to the common *Hydrangea*, and it has proved quite as hardy as that invaluable old plant. The white flowers of this kind will be a welcome addition to the pink and blue ones, the ornaments of so many gardens in autumn.

HARDINESS OF HYDRANGEAS.

As regards the correctness of M. Sisley's note (p. 28) as to the hardiness of *Hydrangeas*, except in districts where the frost is very severe, I have little doubt, as I do not think that any of our *Hydrangeas* where fully exposed, are at all injured, although the thermometer has more frequently been below 20° Fahr. than above that point for some time past. But in spring, when the buds begin to swell, a slight amount of frost, especially if the sun strikes them early in the morning in a frozen state, will completely ruin all bloom for the season, while plants that have been checked by removal would escape by being later in starting into growth. It is, however, at present, premature to speak of the full effects of the frost, as I have a vivid remembrance of former severe frosts when many trees and shrubs that appeared to have escaped, and that looked fresh and green when thaw set in ultimately died, or were so crippled as to be quite disfigured, and unlikely ever again to become ornamental objects. In the present winter even ordinarily mild localities have had a full share of frost, yet, as regards its effects, I quite agree with "Cambrion" (p. 42), that the ripeness of the wood has much to do with escape from its effects, and whatever may be the opinion of others as regards the climate of France as compared with that of Kent or other southern counties, I am of opinion that although the average temperatures of the two might show but slight difference, the chance of thoroughly ripening the wood in autumn would be decidedly in favour of the most southern station, and consequently M. Sisley's plants would bear a degree of cold that might prove fatal to plants that had made their growth in a humid atmosphere. I find our *Camellias*, *Aralias*, and similar plants fully exposed, to be apparently but little injured; but the wind and frost that ushered in the new year have been far more destructive generally than the more intense frost that we had before Christmas, as the covering of snow greatly protected both tops and roots, and probably the latter are more susceptible of extremes of temperature than the former, as I observe that even the hardest plants did not regain their usual luxuriant aspect immediately the thaw set in, but only gradually as the frost relaxed its hold of the soil about their roots. JAMES GROOM.

Linton, Kent.

Best Late-blooming Chrysanthemums.—The following are well worth growing, viz., *Elaine*, *Fair Maid* of Guernsey, *White Venus*, *Fleur de Marie*, *Madame Marthé*, *Mrs. Rundle*, and *Bob*.—D.



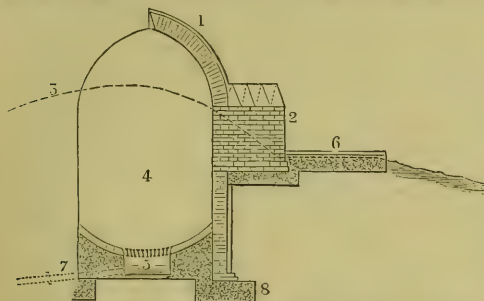
ICE HOUSES AND HOW TO FILL THEM.

THE following description of a most durable and at the same time useful icehouse, together with the method of filling it, may perhaps interest some of your readers. I am of opinion that the best form for an icehouse is a perfect circle, or something very nearly approaching it, and my reason for this is, that, mathematically speaking, more can be put on a circular base than on that of any other form. A circular icehouse, too, can be filled more easily than any angular building. An icehouse should be substantially built of 14 in. brickwork, set in cement, upon a foundation of well-made concrete; the outer surface of the brickwork should be covered with asphalt to

as possible, up the sides, the ice is shovelled in, and here again men beat and ram it into a solid mass; this is continued until the house is filled as high as is practicable, care being taken that straw is built up against the brickwork as the filling proceeds, and that the ice is spread in thin layers each of which is well rammed. The top is then filled with bundles of straw, as is also the passage, in order to prevent the ingress of air. The doors should fit as closely as possible for the same reason. The accompanying is a sketch of such an icehouse as I have attempted to describe; its size, of course, will depend upon circumstances, but, as will be seen, the capacity of the one represented may be much increased without any addition to its height.

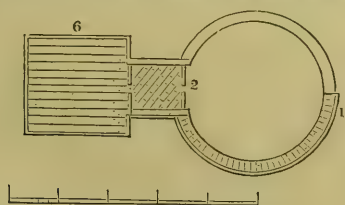
CHARLES DENNIS.

Southwark Park.



Ice-house; Elevation. 1, asphalt; 2, passage; 3, ground line; 4, ce-well; 5, water; 6, platform; 7, drain; 8, concrete.

prevent the percolation of water to the inside; great care must also be taken that the drainage of the structure is perfect. To ensure this the floor should be concave, with a grating of large dimensions placed in the centre for the free passage of the water produced by the melted ice. Beneath the grating a well or cesspool must be constructed to hold any sediment that may find its way to it; from this well the main drain, which must be ample for the purpose, should be led. At about two-thirds the height of the building, a doorway for the purpose of filling and getting out the ice when wanted for use, should be fixed, and from this entrance a covered passage or corridor must be built with an outer door; outside this again a platform (f



Ice-house; ground plan; 1, asphalt; 2, passage; 6, platform.

stone or wood should be firmly fixed, the dimensions of which may be about 10 ft. square; this platform, however, may, if desired, be movable. The best position for an icehouse is some convenient place in the pleasure ground or the wild garden. If properly managed the building may be very nearly buried and the mound around it tastefully planted with trees and shrubs; the top and walls should be covered with various creepers, such as Clematis, Ivy, Hypericum, &c.; thus treated an icehouse really becomes an ornament rather than otherwise. When the season for filling it is favourable, the best ice for the purpose is that from 1 in. to 2 in. in thickness; this is carted and thrown up upon the platform; there men break it and pound it with heavy sticks bent at the end, or with any handy kind of club until it is broken quite small. Indeed, it cannot be too finely pounded, for the smaller it is the better it will pack and consequently the longer it will keep. Having placed about 1 ft. in thickness of straw over the bottom of the house, and, as far

EFFECT OF THE FROST IN THE RIVIERA.

A WRITER in the "Times," some few weeks ago, described the flourishing winter condition of the half-hardy shrubs and trees in the Riviera. Could he now cast eyes on the very vegetation he described so glowingly, I think he would see cause to modify his expressions. A frost of 5°, or 6° at most, with a keen east wind, has brought about the change. Vegetation has been unable to withstand it, and it has left too surely the marks of its track, which only the warm spring breezes can efface. It is chiefly the succulent plants and shrubs that have suffered. The *Datura cornigera*, the pride of the winter garden in kindlier years, has had its flowers and topmost shoots destroyed. Plants from 10 ft. to 15 ft. high, usually loaded in January with pendent, fragrant blooms, have barely a flower left to tell of glory departed. The *Ichromas* both have shared the same sad fate. *Sparmannia*, a native of the Cape, is but a wreck of its former self, wherever it has been exposed to the searching east wind. The *Salvia* have mostly lost their blooms; *S. verticillata* and *tomentos* should have just now been bright with blossoms; the conspicuous *S. cardinalis*, another glory of the winter garden, has not a trace of flowers left. The Mallow-worts again, such as *Abutilon album*, *Achania Malvarum*, and *Sphaeralcea umbellata*, are all scorched in the tops, and offer dried leaves and blackened buds in lieu of blossom and greenery. Still the grand old *Eucalyptus globulus* has weathered the blast, and many a spray of its singular blossoms is seen on the tops of the older trees. Young saplings, however, have suffered where they have been unsheltered from the blast. The fine blue *Solanum lanceolatum* is just now a mass of bright bloom; its big, downy leaves have doubtless served it for shelter, even in the open. One plant that has pleased me in the winter—a native, I believe, of the Cape—has held its own in the general ravage; I allude to the *Eriosepalum*, which does service as Box edging in the Riviera; it is in full bloom just now. When in seed, this Composite looks as if stuck over with little balls of cotton wool, as the name itself implies. *Tournefortia bertonium* has mostly lost its blossoms, but retains its leaves and stems uninjured. It is used as a thick hedge at San Remo to shut in our garden at the Victoria from the sea air. An old plant of *Echeveria metallica*, which has stood in the same place for years, has been sadly handled, especially at the junction of the leaf and the stem. *Linum trigynum*, usually a golden mass in the January garden, has not, I really believe, a flower left to expand, and the leaves are strewn the ground thickly. The young Date Palms look very uncomfortable, but will doubtless recover from the severe check. Such is the condition of the vegetation, as it presents itself to me, after the treatment it has received from the rude east wind.

PETER INCHEBALD.

San Remo, Italy.

Nettles.—I have read (p. 4) Mr. Harpur Crewe's protest against M. Lavalley's remarks respecting Nettles. According to my opinion Nettles are exotic plants, brought at some very remote period from Asia, and, like the Poppy (*Papaver Rhæas*) and many similar plants, follow man wherever he establishes himself, and are never found far from cultivated places. I think, then, that M. Lavalley's assertion in reference to the Nettle is correct. England being highly cultivated, it is not extraordinary that Nettles should be found here and there at some distance from habitations. The following is a curious incident respecting them.—While the Nettles (*Urtica dioica*, *U. urens*, and *U. pilulifera*) abound in all the other parts of southern France on the Mediterranean, I have not yet seen a single plant, either in gardens or elsewhere, at Antibes, Cannes, Nice, Mentone, &c.; it seems as if the climate of Lower Provence is unfavourable to their growth, a fact for which I am quite unable to account or understand.—C. NAUDIN, *Villa Thuret, Antibes*.

TREES, SHRUBS, & WOODLANDS.

RATE OF GROWTH AND QUALITY OF TIMBER.

I DOUBT if Mr. Baines' remarks in reference to this matter (p. 28) will be accepted as correct by those acquainted with the subject. Speaking of the quality of the wood of the Wellingtonia, Mr. Baines says, "I think there is but little room for doubt, unless the tree is an exception to all others of a quick-growing character, for, taking a broad view of the subject, quality, which may be set down to mean strength, toughness and durability, is present in proportion to the time required for its formation;" and again further on he says, "In fact, the natural laws which govern the development of vegetable life in the formation of woody fibre appear to point generally in one direction, which is that slow growth means comparative strength and durability." Now both of these statements are, to a great extent, calculated to mislead. Fast-growing trees are not always comparatively the most useless, nor do trees of the same species, like the Oak, for example, produce better timber when they are grown slow than fast. On the last point I may simply refer Mr. Baines to Lindley's "Theory and Practice of Horticulture," where he will find the matter physiologically explained; and also the Admiralty Test Tables, which prove that the fastest-grown Oak timber is the best by a good deal as regards strength, toughness, and durability. Now let us compare the different species of trees, and see how far Mr. Baines' statements hold good. Take the Beech, which in habit and rate of growth is very like the Oak; but it is well known that it possesses neither strength nor durability, and hence is not employed for building purposes, while the Spanish Chestnut, which grows about as fast again as the Beech, is hardly inferior to Oak for any purpose, and after a time hardly distinguishable from it; hence the much disputed question as to whether Westminster Abbey is roofed in with Chestnut or Oak, but it is generally considered to be the former. Next let us take the Laburnum, which attains its natural height in less than twenty years, and is a comparatively old tree at thirty years of age when it produces timber unsurpassed for hardness, heaviness, and fine, close grain, for which reason it is called the "Ebony of the Alps." The common Elderberry grows up like a rush, but the old wood of the tree becomes both hard and tough, takes a fine polish and is sometimes used as a substitute for Boxwood. I can testify from experience that a piece of Elderberry wood, some years of age, takes the edge off a knife about as soon as any kind of wood with which I am acquainted. The Gum Tree, to go a little further from home, is about the fastest-growing tree in the world, but it is, nevertheless, tough, strong, and durable, hence it is becoming one of the most popular of shipbuilding woods, and the same may be said of Teak, which is preferred to Oak for similar purposes. These are a few exceptions to Mr. Baines' statements that the wood "of quick-growing trees is light, spongy," and of little use. Mr. Baines has fallen into a common error in estimating the quality of timber by its rate of growth, which is but an indifferent guide either way perhaps, for much of the quality of timber depends upon the secretions formed by the tree and the mode of growth. The Scotch Fir in its native habitat and the Larch are not slower growers than some allied species, but their timber is far superior because of the resinous and other secretions which it contains, and probably the strength and durability of the quick-growing Gum tree is explained in the same way. These and other instances prove that estimating the quality of the timber of the Wellingtonia, or that of the wood of any other tree, by its comparative rate of growth alone, as Mr. Baines does, is fallacious. Had we not been well acquainted with the qualities of the Larch, Mr. Baines' remarks might have applied to it just as well as to the Wellingtonia, but in that case he would have been wrong, and there is no reason for supposing that his speculations regarding the Wellingtonia will turn out to be better founded. C.

BEECH TREES AND UNDERWOOD.

IN this, as in some other discussions that take place on kindred subjects, I think there is little doubt that those who hold opposite views are both, to a certain extent correct. I am led to this conclusion through actual acquaintance with places where the state of the undergrowth under Beeches is as different as it well could be, being entirely absent in some cases, and in others as fair a growth as could be met with under other kinds of deciduous trees. The discussion, hitherto, has gone little beyond assertion, on the one side, that in such and such places undergrowth did well with Beeches overhead, and, on the opposite, that nothing did or would grow under these trees. I am acquainted with places where there are portions of wood confined altogether to Beech, large trees, I have no doubt, 150 years old, with no more room between them than is necessary for the main-

tenance of a healthy condition, and yet there is a fair under growth of Hollies, Rhododendrons, and Brambles beneath them, and I know other places where, even under single trees standing a considerable distance away from any others, no single living thing exists, not so much as a tuft of Grass, under them. In each case the cause is obvious; in the first the ground is occupied by a number of trees that in their early days have stood sufficiently close to prevent the development of the lower branches, leaving them with clean stems, and branches high up from the ground. Where the trees stood singly they have had from the first room enough to assume their natural habit, wide-spreading branches hanging almost down to the ground, and in summer clothed with dense foliage, which excludes light to such an extent that nothing, not even weeds, could exist underneath, and it is not uncommon to find the same thing occur under Horse Chestnuts and Turkey Oaks, where the branches of these have grown uninterfered with in a like manner. I have never seen anything to lead to the supposition that there is anything in the Beech more than in other deciduous trees which is injurious to undergrowth further than their dense shade, when fully developed, being such as to prevent other plants existing beneath them. As to the theory that the roots of the Beech exhaust the soil so much as to prevent anything living on the surface occupied by them, this is doubtless a mistake, as is evidenced by the Ash, the roots of which, as is well known, impoverish the soil to a greater extent probably than any other tree, and yet beneath it many kinds of undergrowth can be seen doing fairly; but the branches of the Ash are naturally much more erect than those of the Beech, and it is not nearly so densely clothed with foliage, consequently it admits more light to the surface under it, and to this cause I think it is evident that the difference is due.

T. BAINES.

— Referring to the discussion relating to shrubs under Beech trees, it appears that under certain circumstances both sides may be right. It is self-evident that under a well-developed Beech tree or clump of trees, with the branches touching the ground all round and the roots interlaced and wattled, as is usual with the Beech, no shrub or vegetation of any sort could succeed; but, if the Beeches be comparatively wide apart and on a deep soil, and if circumstances have caused them at some past period to lose their bottom branches, then, with trenching and other preparation, various evergreens will grow underneath them, such as Box, Hollies, Yews, and Rhododendrons, if there be no lime in the soil. It was, I think, under such circumstances that the late Mr. Rose, with the consideration and concurrence of the Duke of Roxburgh, first began to plant Rhododendrons under the Beeches at Floors, about 1857. Hundreds, if not thousands, were planted there in his time. Considerable, indeed, rank vegetation will be seen under Beeches in certain parts of the New Forest under similar circumstances, that is, where the trees are old and the branches and foliage high overhead. But an instance of a contrary character may be seen at Powerscourt, Co. Wicklow, where there is a fine clump of Beeches, consisting of about two acres in extent, at a spot which need not be particularised. These Beeches, from intention or neglect, have not been thinned, and the consequence is they are a mass of bare and lofty trunks, like the stems of Palm trees, with no vegetation whatever underneath except a thin, scanty Grass. Where I now am, however, can be seen many Beeches of great age with abundance of vegetation underneath them, but the branches do not reach by many yards the surface of the ground, and the trees are wide enough apart to admit air and a sufficiency of light. I have lately cleared away some very old Beeches, root and branch, and I must say that the root part of the labour was of a most difficult character. Blasting was impossible, the roots being like wattled work, and I am quite sure that before anything could be planted over them it would first have been necessary to deposit a sufficient depth of soil all over the surface; the digging of holes would have been quite out of the question within the radius of the branches.

W. D.

Dublin.

The Canadian Poplar.—I am glad to see (p. 24) attention called to the merits of this tree, which I have long thought deserved to be more extensively planted than it is, especially in situations for which it is more especially adapted, viz., moist water margins and similar places. Even when planted in elevated or dry situations, it overtops everything else. I have in my "mind's eye" a belt of mixed trees that were planted about forty years ago, and the Canadian Poplar, as it is locally called, is nearly double the height of the other trees, of which a goodly proportion are Spruce Firs; the Poplar far outstrips them all both in height and cubic contents of timber. It is, however, as I have said, in damp ground that its rapidity of growth and inclination to produce timber is more especi-

ally remarkable. In such situations it is no unusual thing for trees that have been planted thirty or forty years to measure double these figures in cubic contents of timber. The timber, too, is not without value; but I do not fully endorse an old distich which speaks of it as outlasting that of the Oak under certain circumstances. There are, however, purposes for which it is very suitable, being almost incombustible. In Kent there has been of late years a great demand for it for the joists of Hop kilns, which, being exposed to the action of a hot charcoal or coke fire burning openly a few feet below, are necessarily much exposed to the risk of being burned down. Poplar joists are, therefore, much sought after. Boards of Poplar, as well as those of Willow, are also useful for insides of stone waggons or carts, where a harder wood is not so good, being liable to splinter during rough usage. There are other purposes to which Poplar wood may be turned to good account, but it is unnecessary to mention them here; suffice it to say that the rapidity of its growth is a sufficient reason for recommending it to be planted extensively by all who wish for immediate effect. Like your correspondent, I am at a loss to know the difference between what in some places is called the Black Italian Poplar and the Canadian. The latter I take to be identical with the Ontario, which is the name most generally given to the Lombardy; but, of course, neither are to be confounded with the Lombardy, which, though ornamental, does not produce timber in anything like the proportion of the Ontario or Canadian. I have never seen the Black Italian and Canadian together, and have only met with them hundreds of miles apart and at intervals of many years. It is possible the two may be distinct.—A RETIRED GARDENER.

Tree Roots and Dynamite.—Referring to the use of Dynamite for blowing up large tree roots (p. 534, Vol. XIV.), will Mr. Miller, of Clumber, be kind enough to describe the *modus operandi*, the charge of dynamite, how applied, and where procured? Application having been made to the local ironmongers without success in obtaining the article.—W. L. C.

Two Ornamental Weeping Trees.—I noticed lately, in the nurseries of Fisher, Holmes, & Co., Sheffield, a variety of the purple Weeping Beech, which appeared to me to be superior to other kinds. It is named Stevens' Purple Weeping Beech, and was raised by Mr. Stevens, of Coventry, not many years ago. The weeping habit of the tree is perfect, and reminds one of that of the American Weeping Willow. Another equally attractive subject is a distinctly weeping variety of the May Duke Cherry, which, when in flower or fruit, must be a pretty tree either for a lawn or shrubbery. The plants of it which I saw, and which were leafless at the time, were in the form of tall standards, and the shoots drooped as perpendicularly as those of a Weeping Ash. As to the bearing capabilities of the tree I cannot speak from personal observation, but I was informed that the tree in no way differs from the common May Duke, except in regard to its weeping habit.—J. S. W.

Eucalyptus amygdalina.—In speaking of the value of the Eucalyptus as a means of preventing malaria, it is stated in the "Daily News" of the 9th inst., that Prince Troubetkoy, who has paid much attention to the subject, has come to the conclusion that *E. amygdalina* is a more useful species than *E. globulus*, as the leaves of the former contain six times as much volatile oil as the leaves of the latter, and the growth of the plant is equally rapid. The Prince states that, at his villa in the neighbourhood of Rome, *E. amygdalina* has resisted the effects of a temperature of 6° below zero. Can this be correct? Is so great a degree of cold not unusual in the vicinity of Rome? The term zero is sometimes erroneously applied to the freezing point, or 32° Fahr.; can such be the case in this instance? If the *Eucalyptus amygdalina* can withstand a depression of temperature amounting to 38° of frost, the plant may with every confidence be extensively planted in this country.—P. GRIEVE, *Culford*.

Lilliputian Wellingtonias.—One is not surprised at sports originating either from seed or branch from plants that have been long in cultivation, and perhaps at some period crossed with other varieties, but it is not often one meets with distinct sports among forest trees such as may now be seen at the Handsworth Nurseries, near Sheffield, in the shape of not a dwarf, but absolutely a Lilliputian Wellingtonia, raised in the nursery from seed sent from California. This Lilliputian form consists of about a dozen trees, all propagated from the original seedling; they are some five years old, about the height of one's hand or little more, and as dense and close in habit as a small *Retinospora*, for which they might be mistaken until one stoops and examines them minutely, when the true characteristics of the Wellingtonia are observed, except that the roots are as close and prickly as those of a Juniper. I never saw such a sport before.—J. S. W.

PLANT HAIRS—THEIR FORMS AND USES.

BY PROF. W. J. BEAL.

COMMON in gardens is a plant called *Ageratum mexicanum*, the stems and framework of the leaves of which are slightly rough on account of large numbers of hair-like projections



Fig. 2. Curved Hairs on *Ageratum mexicanum*.*

Fig. 1.

along the entire surface. A small fragment placed under a moderate magnifying power reveals the structure of these beautiful and delicate objects as follows: The greater number of these consist of from five to twenty cells of different sizes and lengths placed end to end. Each hair or chain of cells is curved more or less, often into a complete ring, always towards the top of the plant. The end cell is blunt or rounded at the tip. Scattered among these are occasionally seen sharp-pointed hairs which are straight and much more slender (fig. 3).



Fig. 3.—Slender hair of *Ageratum mexicanum*.



Fig. 4.—Glandular hairs having two rows of cells.

Still less frequently may be seen larger and stouter projections (fig. 4) in which there are two rows of cells overlapping each other. The lower cells are three or four times as long as they are broad, while towards the top the transverse diameter is the greater. The top of the projection is capped with a single hemispherical cell which is filled with a mucilaginous substance. All the other cells are in a greater or less



Fig. 5.—Hair of *Ageratum*.



Fig. 6.—Hair of *Erigeron canadense*.



Fig. 7.—Stout one-celled hair on *Puccinia capillare*.

degree transparent. They are filled with a liquid containing granules, which, under a magnifying power of 250 diameters, are often seen to move about in steady, flowing currents. Some of these glandular hairs (fig. 5) have but a single row of cells for the main portion of their length. Perhaps still other forms might be found which would be intermediate between some of these, showing more exclusively that they were modified forms of the same members. *Erigeron canadense*, a common weed, is clothed all over its surface with slender, rapidly-tapering hairs composed of a single row of cells. Many species

* The degree to which these figures are magnified is not given because of considerable uncertainty in most cases.

of *Helianthus* are covered with similar hairs. The surface of *Panicum capillare*, old Witch Grass, is covered with slender, one-celled hairs, which are straight and quite stiff for their size. The surface of a common *Physalis*, or Ground Cherry,

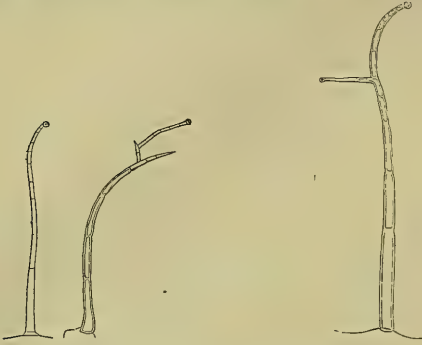


Fig. 8. Fig. 9. Fig. 10.
Hairs on surface of *Physalis*, Ground Cherry.

abounds in slender hairs composed of from ten to fifteen cells placed in a single row. Some of these hairs terminate in a sharp point, but most of them have, at the end, a round cell like a knob, full of a sticky substance. Occasionally a hair produces one or more branches, which may likewise terminate



Fig. 11.—Hooked hair on fruit of *CIRCÆA luteitiana*.

with a short point or a globular cell. The fruit of *CIRCÆA luteitiana*, Enchanter's Nightshade, is covered with rather stout one-celled hairs which have a hook at the extremity. The stems of the common Butter Bean of our gardens have a few

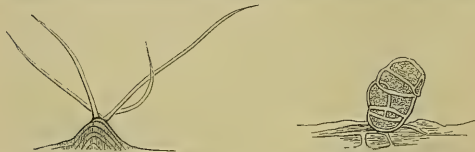


Fig. 12.—Hairs on *Malva rotundifolia*.

Fig. 13.—Sessile gland on same plant.

scattering hairs of similar structure, though they are smaller and much more delicate. The surface of *Malva rotundifolia*, Common Mallow, is quite harsh to the touch, on account of numerous rather stout one-celled hairs, one to six of which project from a conical protuberance. These stout hairs spread



Fig. 14.—Hairs on petioles of *Steironema ciliata*.

in every direction. Among the hairs are a few sessile glands capped with two quarters of spheres. The edges of the petioles of *Steironema* (*Lysimachia*) *ciliata*, a kind of Loosestrife, are fringed with hairs, some of which are short and simple, while others are much larger and irregularly branched

like a stag's horn. Each hair, whether simple or branching, seems to consist of one cell, made of several pieces fitted together. The surface of *Leersia oryzoides* and *L. virginica*, Rice-cut Grass, is well supplied with short, stout, one-celled spines, all of which point downwards. Several species of *Galium*, Bed Straw, are also supplied with hooks of a similar character. In these the base of each hook is quite broad and the point quite short. The under surfaces of the leaves and the young stems of *Aralia*



Fig. 15.—Hairs on *Leersia oryzoides*.

papyrifera, Chinese Rice-paper plant, are thickly covered with a woolly substance, which consists of immense numbers of one-celled stalks, each having at the tip six or more one-celled

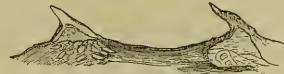


Fig. 16.—Hairs on *Galium*.

arms or rays, which spread in every direction, like the spokes of a wheel. The common Mullein is covered in every part with a still more abundant supply of branching hairs. The main axis of the hairs has radiating arms at different heights

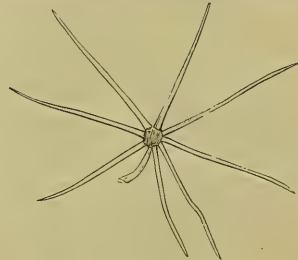


Fig. 17.—Hair on *Aralia papyrifera*.

along its length. The glaucous nature of Cabbage leaves and Plums is due to numerous small cells on the surface. The mealy substance on Pig Weed, or Lamb's Quarter, consists in



Fig. 18.—Branching hair on *Shepherdia canadensis*.

numerous capitate hairs. *Shepherdia canadensis* is a rather rare shrub growing about the borders of lakes and seas. The young stems and buds, and portions of the leaves, are rendered red or rusty on account of the large number of scales, each of which is held to the plant by a short stem. Figs. 18 and 19 show two of these objects. In fig. 19 there are several rays, are fringed side by side throughout most of their length, while in fig. 18 there are but few rays, which separate at once

from each other. Between these two extreme specimens are found any number of intermediate forms. Much like the preceding are the star-shaped scales on the leaves of *Deutzia scabra*. There are many scales of a similar character found on most of our Ferns.

De Candolle, in his "Vegetable Organography," says of the hairs of plants: "Some are very tender, others very rigid, and most are of all the intermediate degrees. With regard to

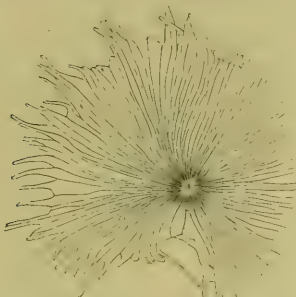


Fig. 19.—Shield-shaped scale on *Shepherdia canadensis*.

their direction, some are vertical to the surface from which they spring; some more or less incline forwards; others more or less backwards; some are perfectly straight, others hooked at the point; there are several which are contracted, or which are interwoven with one another. As to their form, they are found as cylinders and very cylindrically-elongated cones. They are sometimes seen in the form of reverse cones; among those that are ramified they are found forked, with two, three, or a greater number of branches; or starred at their apex, or divided at their base into branches which seem as so

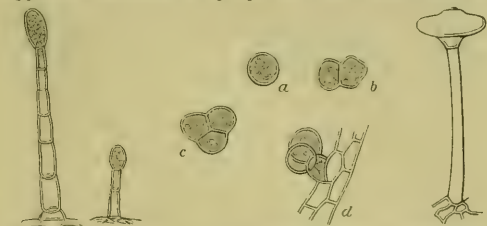


Fig. 20.—Star-shaped hairs on *Deutzia scabra*.

many distinct hairs re-united into bundles, having a common base." Sachs says, "The first indication of the formation of hairs occurs in the papillose protuberances of the epidermis of many petals, to which their velvety appearance is due. To the simplest forms belong also the root-hairs which grow from the epidermis of true roots or underground stems (*Pteris aquilina* and *Equisetum*), they are thin-walled bag-like protuberances of the epidermis cells which lengthen by growth at the apex."

The *Petunia* of our gardens is rendered sticky and unpleasant to the touch on account of one-celled glands raised on a stem of from two to seven cells. *Scrophularia nodosa*, the Figwort of our rich bottom lands, has numerous glands on its surface. These are composed of one, two, three or more cells raised on a short stalk. Some of the larger glands are more expanded into flattened spheres, and are much like those found

on our garden *Verbenas*. The gland of the garden *Verbena* consists of a large cluster of about thirty-five cells at the tip of a delicate stalk. The top of the gland is seen in fig. 26, and appears to have about thirty rays, and some central pieces of



Figs. 21 and 22—Glandular hairs of *Petunia*.

Fig. 23.—Glands on *Scrophularia nodosa*.

Fig. 24—Glandular hair of *Verbena*.

irregular shape. The lower surface of the gland, when it breaks off, shows two rings, one within the other. The inner is seen first, and on turning down the tube of the microscope the outer ring is seen. The gland is full of a purple substance.



Fig. 25.—Lower side of gland.

Fig. 26.—Top of gland.

Fig. 27.—Side view of glands on Tomato.

Fig. 28.—Top view.

Figs. 27 and 28 exhibit the four-celled glands of the Tomato plant. Each cell, as in many other cases, shows a nucleus and some of them one or more nucleoli. Besides the short hair and the gland of the Water Melon plant shown in figs. 30 and



Fig. 29.—Hair and protuberance on Tomato.

31, there are large numbers of other very long-jointed hairs. Figs. 32 and 33 show two hairs of *Phlox Drummondii*. Here the glands appear to be composed of four or more cells.

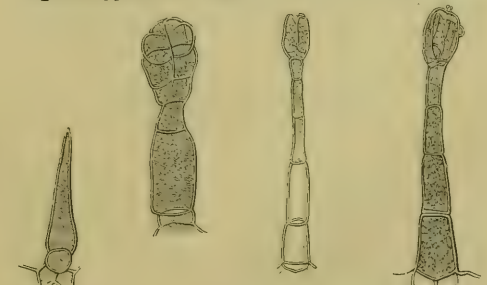


Fig. 30.—Short hair of plant of Water Melon.

Fig. 31.—Glandular hair of Water Melon.

Fig. 32.—Hair of *Phlox Drummondii*.

Fig. 33.—Hair of *Phlox Drummondii*.

of the glands of this plant consist of a single cell. Fig. 34, *a*, *b*, represent some of the smallest hairs on *Martynia proboscidea*. Besides a few of these small hairs, the whole surface

of the plant, including the sepals and petals, is thickly covered with glandular hairs, as in figs. 35, 36, 37, 38, 39. These glands, as do most glands of other plants to a greater or less extent, secrete a sticky substance, which is usually increased in quantity by irritation. From the end of the gland, when touched, may be drawn out a gossamer thread of some length. The pulling out of the thread exhausts the gland wholly or in part, and causes it to collapse or change its shape. Fig. 36 shows a gland from which such a thread has been drawn. The

hairs or spines are stout and point backward, as in *Galium* and *Leersia*, they serve well to hold up the weak plant as it rises among stouter objects. Fruit with hooked hairs is likely to be scattered by holding fast to animals. The bloom on a Cabbage leaf or Plum, and the thick hairs on plants prevent them from becoming wet on the surface. The shield and star-shaped scales on *Shepherdia* and *Deutzia*, and others may serve the same purposes as hairs. These delicate objects must protect the plant from injury on account of sudden changes of the weather. The advantage of the sting of the Nettle to the plant is obviously a means of self-protection. The function of glandular hairs in some cases is a great mystery. In the case of *Martynia* I found they caught immense numbers of small insects, and in some way seemed to suck out their substance. Small insects are found to a greater or less extent caught and held fast by the glandular hairs on all or most of the plants which produce glands. In his "Insectivorous Plants" Darwin, by experimenting, concludes that the glands of *Drosera* devour animal substances. The same conclusion is arrived at in the case of numerous other plants, as, for instance, some *Saxifrages*, *Primulas*, *Pelargoniums* and *Pingu-*

Fig. 34.—Hairs of *Martynia proboscidea*.



Fig. 35.



Fig. 36. Glands of *Martynia*.



Fig. 37.

fruit of *Tecoma radicans* (Trumpet Creeper) has on its surface numerous sessile, cup-shaped glands of which Fig. 40 shows a vertical section. In damp weather, or when not exposed to very dry air, these cups are heaped full with a drop of glistening liquid in each. Besides these, on the surface are numerous spots (fig. 41) in which numerous cells are clustered into a circular form. From these we may find all gradations down to a two-celled stomate, as in fig. 42. On each margin of the petiole



Fig. 38. Tips of Glands of *Martynia*.



Fig. 39.

of *Viburnum Opulus* (fig. 43) and *Passiflora* are some cup-like glands, which exude a sticky substance. Similar glands are found on the petioles of the Cherry and some Peaches. For our present purpose enough of these hairs and glands have been described and illustrated. A large majority of plants possess something of this nature in a greater or less degree. When fresh, and especially when not exposed to direct sunlight or air which is too dry, these glands are covered with a spherical glistening drop which is often several times the diameter of the gland. The uses of these hairs and glands we probably now understand to some extent, but in other cases we

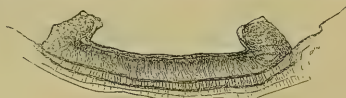


Fig. 40.—Gland of *Tecoma radicans*.

can only guess their office. The slender-pointed hairs may serve to some extent to ward off insects. These and the scale-like hairs may prevent the delicate surface from being scorched by the sun. This is not very probable, because most of the hairs on leaves are on the under side away from the direct rays of the sun. In the case of the common Mullein, the thick branching hairs probably make the plant offensive to cattle and other animals. In a similar way other plants are protected from animals. When packed within the bud scales during winter, the young leaves and flowers of many of our trees and shrubs are well protected by these soft hairs which envelope the tender parts like a mass of cotton or wool. After expansion of the buds these hairs generally drop off. When the



Fig. 41.—Spot on fruit of same.



Fig. 42.—Stoma on fruit of same.

culas. The glands of the Trumpet Creeper are active, even till the fruit is of full size are quite near maturity. They are much visited by flies, wasps, and especially by ants to such an extent that the plant is often considered a nuisance when placed near the house. The glands on the leaves of Cherry trees and *Viburnum* are also much frequented by insects. The base of the leaves of the Sunflower, Locust, *Pteris aquilina*, and numerous other plants are freely visited by insects; but of what benefit it can be to *Tecoma*, *Pteris*, *Helianthus*, and the Cherry to be thus visited is beyond my certain knowledge. The glands

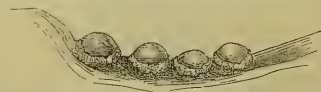


Fig. 43.—Glands on petiole of Snowball tree.

of Tomatoes, Tobacco, Petunia, and many other plants secrete a substance which is offensive to most insects and other animals which might otherwise devour the plants. Mr. Darwin has also shown that some of these plants do certainly absorb and appropriate gaseous and liquid bodies. Many ingenious experiments were made on plants of several different Orders, showing that "they detect with almost unerring certainty the presence of nitrogen." Plants by their glands were fed with Green Peas, raw meat, a decoction of Grass leaves. These substances "are acted on in exactly the same manner as by gastric juice." Why may not these glands also draw nourishment from the particles of dust which fall on them from the air, or from the particles of soil which in many cases accumulate to such an extent as to completely cover some portions of the plant? As root hairs are active in absorbing materials from the soil including something from solid substances, why should not these active glands absorb materials from the dust and fragments of soil? The free presence of the air and light may also assist in this supposed action. This covering of the plant by the particles of soil held by the hairs and glands may also save the plant from destruction by animals. Of one thing I am certain that these delicate objects are interesting to study. Situated as they are in immense numbers and in such great variety on the surface of so many plants, they are easily obtained and easily prepared for examination. They are excellent objects for a beginner in the use of the compound microscope; and for protracted and careful experiments, they are worthy the skill of the most accomplished scientist. In them we may spend weeks to advantage in observing the develop-

ment of cells, the nucleus and nucleoli, and the gyration of the sap. In form and colour they are exquisitely beautiful, while in variety they are inexhaustible.—“American Naturalist.”

GARDEN DESTROYERS.

THE PEA WEEVIL.

(BRUCHUS PISI.)

It is somewhat a matter of doubt whether this insect is really a native of this country, as it is frequently imported in Peas and Beans, but it is not a question of much importance to the horticulturist, as it has been thoroughly naturalised with us for many years, and its destructive habits are unquestioned. All gardeners have been troubled with what are commonly called worm-eaten Peas. These seeds have suffered from the attacks of the grubs of this insect, or a very nearly-allied species of the same genus (*Bruchus granarius*) the Grain Bruchus. At times the amount of damage caused by these grubs is very great, nearly every Pea or Bean containing one. Peas and Beans of all kinds, and the seeds of various leguminous plants, are liable to the attacks of these weevils. As the grubs generally avoid the vital part of the seed, those that are thus eaten will frequently germinate, but the plants from them are sickly and almost worthless. The remedies which can be used to destroy these insects are very few. The weevils are so small that it would be useless to search for them, and, as the grubs pass the whole of their lives within the Peas, almost any means of destroying them which could be devised would also injure the Peas. If a crop is so badly attacked as to be useless, it should at once be burned. Mr. Curtis suggests that immersing the Peas or Beans in oil would probably destroy the insects without injuring the vitality of the seeds. Others recommend submitting the seeds to a temperature of 150° Fahr. in an oven, which would probably kill the grubs without preventing the seeds from germinating, or to the action of boiling water for one minute immediately they are gathered, as the grubs are then just below the skin of the seeds, and would be destroyed without injuring the Peas. There are fortunately several small parasitic insects belonging to the ichneumonidae which deposit their eggs in the grubs, carefully hidden as they are in the Peas. The little grubs from these eggs soon kill the weevil grubs, and in this way naturally assist in keeping down the numbers of these pests. The beetles are usually found in the spring and summer on various flowers; in February they may be found on the blossoms of Furze, in June on White Thorn, in July and August on Spirea and Rhubarb. When the young Pea and Bean pods begin to grow the females lay their eggs on the pods opposite the seeds, and the grubs, when hatched, eat their way at once through the pods and into the seeds, which continue to grow, and, even if examined, do not show any external signs of injury, but on opening them a small grub will be found inside each, which feeds on the interior of the seed until little or none remains; it then assumes the chrysalis state, and in due course is transformed into the perfect insect, which, in the case of the Pea weevil leaves the seeds when they are fit to gather. The grubs of the Grain Bruchus generally remain in the seeds during the winter, the perfect insects making their appearance in the spring; in fine, warm weather, however, the transformations are more rapid, and the beetles sometimes emerge in the autumn. The grub before changing into a chrysalis forms a passage to the outer skin of the Pea, and probably gnaws that partially through in a circular ring, so that when the beetle, in its endeavours to escape, pushes against it it easily gives way. The seed should always be examined before sowing, when a spot may be found on each affected seed, which is rather less opaque and of a different colour to the rest of the skin; under this spot is the passage by which the beetle comes forth. Often the beetles are found dead in Peas and Beans which have been kept together in large quantities. This is probably the result of the insects being unable to leave the Peas on account of the door



Bruchus Pisi.

by which they would make their exit being in contact with other Peas, and so preventing the insects from escaping, or by the the skin of the Peas becoming so dry and hard that the beetle could not force its way out. The Pea weevil is about 2-10ths of an inch in length, and is black in colour, thickly covered with bright, brown, short hairs above and greyish ones below. The head is small and drooping; the antennae have eleven joints, the four nearest the base being yellowish; the thorax is much wider behind than in front; the wing cases are considerably wider than the thorax, giving the insect a very broad and stout appearance. Each are marked with ten longitudinal lines or striae, and have a somewhat mottled appearance, caused by various pale dots and patches. The body is not entirely covered by the wing cases, but projects beyond in a somewhat sloping, triangular, terminal joint. The legs are strong, the hinder pair being considerably longer than the others. The Grain Bruchus is rather smaller than the Pea weevil; it is very similar in form but not quite so thickly covered with hairs. There are several slight differences between the two species, but it is needless here to dilate on them. The grubs of both species are whitish in colour, and rather more than 1-8th of an inch in length. Their heads are furnished with a strong pair of jaws. Their bodies consist of thirteen joints, and are fat and fleshy and rather curved. The chrysalides are whitish, the limbs of the future beetle being visible through the thin covering skin. S. G. S.

Destruction of Barn Owls.—While agreeing in the main with Mr. Harper Crew's remarks on this subject (p. 24) there is one point relative to the charge which he brings against sportsmen on which I must enter a protest. What may be done around Tring, one cannot say, but, as an old sportsman, and one who has shot over various parts of the country during more than a quarter of a century, I can most positively assert that I do not remember a single instance of a barn owl having been shot by anyone claiming to be a true sportsman. Besides, the barn owl does not [make its appearance until dusk, long before which sportsmen will have returned home. Gamekeepers will sometimes kill owls, as they destroy very young rabbits, but it is a practice which ought to be sternly objected to by their employers. I doubt very much, however, whether (as Mr. Harper Crew thinks) farmers do so. They, at least, are well aware of their usefulness in destroying vermin, and it is common in many parts to have a hole cut in the gables of barns and other outbuildings, in order to entice the owls to enter.—C. F., Merlwood.

THE LATE FROST AND ITS EFFECTS.

LIKE many others, I was extremely pleased to find, when the first thaw that came on Christmas Day had released many shrubs from their frost-bound condition, and freed them from their weight of snow, how little apparent damage had been done. A recurrence of frost, with nipping easterly wind, has now caused an amount of injury that has not been equalled for many years. Here, on the north-east coast, the thermometer never descended below 17°, thus marking only 15° of frost at the most; and, since the new year, only 7° of frost have been registered; but the violent and dry east wind has withered up many things that withstood the first frost. The greatest losses to deplore are the large bushes of Veronicas of the Hybrid Andersoni section, but Blue Gem Veronica, though much crippled, will recover; this has always been very hardy here; Escaloniae are sadly browned, E. macrantha and rubra being little injured; E. montevideensis, Ingrami, and pterocladon, are killed to the ground; Dracena Veitchi is but little hurt, and Phormium tenax has escaped with a browning; Coronnilla glauca seems killed, and the broad-leaved Myrtle much injured, but the small-leaved variety is not touched. A few shrubs have proved themselves hardy, even under these trying circumstances; Pittosporum Tobira, Choisya ternata, Rapiholepis ovata, Desfontainia spinosa, and Aralia Sieboldi, are quite uninjured; Berberidopsis corallina and Viburnum Awafurki have lost most of their leaves, but do not seem seriously injured; Bambusa falcata and Chamissoae Fortunei testify to the severity of Chinese winters by seeming quite regardless of the cold they have lately endured; the Californian shrubs, Fremontia californica, and Ceanothus azureus look pinched, but will recover; Ceanothus Gloire de Versailles seems unhurt, but C. thyrsiflorus is dead; Eleagnus pungens var., and the handsome silver variegated form of the Japanese Eucalyptus, are uninjured, while the golden variety and the green type have escaped harm; Arundo conspicua is most remarkable for its endurance of bitter

east wind; its leaves are still green and fresh, while Pampas Grass and Tritomas are withered up or reduced to pulp. E. H. W.

St. Nicholas House, Sea-bro'.

— There is too much reason to fear that the latest visitation of frost has been productive of much mischief in gardens, and especially in the case of vegetables, as for several days bitter easterly winds prevailed, which seemed literally to scorch and dry up the leaves and young shoots of all plants to such an extent as to make many look as if dead. The frost before the end of the year, though intense, was accompanied by a quiet state of the atmosphere, and the snowfall certainly served, to some extent, to protect vegetation. The second visitation following so soon after the first one, with the intervention of but a few days of thaw and excessive rainfall, literally deluging the soil, found everything far more amenable to its influence than before. During its prevalence it has puzzled people to keep it at bay to protect houses, to keep it from Potato and other tender roots, to protect half-hardy shrubs and plants, and, not least, to find work for all hands to do. In many respects the frost has been productive of heavy losses, in other respects it may be productive of greater gain, so that the balance may be, after all, in our favour. A. D.

Effects of the Late Frost.—Mr. Gambleton's letter (p. 27) is very interesting but also very alarming. If he has already lost so much in his highly favoured locality, what are we to expect? I hope others will give us their experience in the same direction, but I would suggest that it is much too early yet to reckon up gains and losses. Three months more at least must pass before we can speak with any certainty. Many plants, now apparently dead, may be all right at the root and may shoot up again vigorously; on the other hand, many plants that now look unhurt may yet have had their constitutions so weakened as to be unable to bear up against a cold spring. My own opinion is that very little damage was done by the December frosts. The air was dry and there was little or no wind, but I fear this January frost will be very fatal; it came in after a very rapid thaw, and the wind has been strong and very cold. May I suggest to any of your correspondents who send accounts of their gains or losses that they give their addresses, if not their names. Such lists are of very little use unless we know something of the situation of the gardens in which the plants grow.—HENRY R. ELLACOMBE, *Bitton Vicarage.*

OUR NATIONAL COOKERY.

It is allowed on all hands that there is urgent need of reform in the cookery of England. It has been emphatically said that while the Powers above have provided us with the best materials, our cooks come mostly from a lower region. This does not, of course, apply to the mansions of the rich; there, with every expensive appliance, and a staff of thoroughly well-trained servants at high wages, it would be hard, indeed, if every maid were not a success. But all Englishmen do not inhabit palaces of plenty and luxury; many families must, perforce, content themselves with the imperfect performances of a "plain cook," while lower down in the social scale the ill-arranged dinners are prepared and served by an untidy "maid-of-all-work." What can these uneducated young women know of the true principles of cookery? They have had, in all probability, no opportunity of acquiring them; and yet the health and comfort of a family depend in a great measure on their unassisted endeavours. A "plain cook," questioned by an anxious mistress as to her capabilities, mostly replies, "I do not understand French dishes (?), but I can roast, boil, and fry." The roasting consists of putting a piece of meat into the oven, and basting it by fits and starts, when she is not otherwise occupied. The boiling is accomplished by immersing the luckless joint in a great deal of water, three times too much, and keeping it boiling at a galloping rate until it is served—ragged and unpalatable. "How, then, would you fry—a sole, for instance?" Nothing daunted, the cook replies, "Having wiped it, I put a little fat into the pan, and fry it brown." How pitiable! These evils have been endured in patience too long; that a reform is greatly to be desired has been felt by all classes for some time. Hence the establishment in provincial towns (to say nothing of the excellent cookery lectures at South Kensington and elsewhere) of schools of cookery. However, a long time must elapse before a knowledge of the subject can be universal; at present, it is confined to a privileged few, who are able and willing to avail themselves of these advantages.

It is, nevertheless, cheering to think that the matter has been taken up. It is said that the night is the darkest just before the dawn. The night of culinary ignorance was dark enough, Heaven knows, before any attempt was made to shed a ray of light on the gloom. It was very pleasant to me, some months ago, to hear a pupil of the South Kensington School lecture on a dish which she prepared

before the audience. She was a pretty girl of twenty, very appropriately dressed, with a bewitching mob cap, trimmed with cherry ribbons, and a muslin apron over a neat cotton dress. "I now proceed," said she, suiting the action to the word, "to gratinate my Cauliflower." When she had finished, the young lady lower down prepared a dish of "Carottes à la maitre d'hôtel" (it was a vegetable day), detailing the process as she went on. This continued until the class, which consisted of six, had taken up their parables in like manner. They were listened to with great attention by the audience, which consisted partly of relations and friends, though there were many outsiders like myself. If the youthful lecturers appeared to be at fault, a real cook in the background was ready to set them right. These girls evidently belonged to an educated class, and had, no doubt, passed through the regular course which constitutes a young lady's training. They probably understood "the use of the globes," played the piano, perhaps the violin, and had acquired a smattering of one or two European languages. But that part of their training which I witnessed was by no means the least important. It was that which was to fit them to become good wives, active heads of households, patient trainers of ignorant, but, perhaps, willing servants; it was that part which, carried out fully, would teach them to make the most of a narrow income, and to diffuse plenty and comfort around them—the blessings of a well-appointed home. A writer of ancient days, describing a paterfamilias matron, says: "She looketh well to the ways of her household, and eateth not the bread of idleness." If we turn to the condition of the labouring classes, their case is sad indeed, always excepting those families where the wife has been a well-trained cook in the service of affluent persons. Such a one will probably make the best of everything. Her husband will not forsake his clean, bright hearth for the noisy public house, nor her children be found perpetually on the dispensary doctor's hands for maladies brought on mainly by ill-cooked, distasteful food. With others the case is widely different. How often have I seen cottages, with gardens full of excellent vegetables, where the bread-winner was in the receipt of good weekly wages! but I knew that, through the incompetence of the wife, all was discomfort and bad management. "Much fool is in the tillage of the poor, but there is that is destroyed for the lack of judgment," was written by one who had thought deeply on the subject many centuries ago, and it is quite true now. Let the educated among us take the matter in hand, it is well worthy their attention. Let them not disdain the humble duty of alleviating want by teaching thrifty, careful habits to their poorer neighbours. Let the wives and daughters of our professional and mercantile men spend some of their leisure in acquiring the principles of good cooking, we shall soon see a better class of cooks rising up among us, for the spread of culinary knowledge among mistresses will soon do away with idle and incompetent servants. One feature of the times is the appearance of a number of cookery books in a cheap form. My attention has recently been called to three written by Miss Orson, the superintendent of the New York Cookery School. The first is called, "A Cooking Manual, or Practical Directions for Economical Every Day Cookery." With this came two pamphlets, entitled "25-Cent Dinners for Families of Six," and "15-Cent Dinners for Working Men's Families." The first-named of these publications "is intended," says the authoress, "for the use of those housekeepers and cooks who wish to know how to make the most wholesome and palatable dishes at the least possible cost." "In cooking," continues Miss Orson, "this fact should be remembered above all others—a good cook never wastes; it is her pride to make the most of everything in the shape of food entrusted to her care, and her pleasure to serve it in the most appetising form." Her chapters on "Salads," "Vegetables," "Cheap Dishes without Meat," are truly excellent. What would the plain cook referred to in the beginning of this paper say to a "Mushroom pudding," or a "Carrot stew?" She would probably consider her mistress had taken leave of her wits, were she to order a vegetable soup without meat; yet we know that this dish often appears on the tables of the wealthy in France! The chapters on "Cookery for Invalids," and on "Bread" contain much information. The directions for marketing at the beginning of the book will be very acceptable to young and inexperienced housekeepers, indeed, older ones; may not disdain to take a lesson. The subject of marketing recalls to my mind the heroine of one of Charles Kingsley's novels who (the undowered daughter of an earl) marries a struggling literary man. She takes high views of a wife's duties and accordingly shortly after her marriage goes to market with her maid to purchase provisions for her small household. Her ideas on the subject of what was necessary were peculiar, as she came back with a woodcock and a head of Celery.

The 25-cent dinners are intended for the families of artisans, and I thought the preface, which contains an account of the nutritive qualities of different kinds of food, very good indeed. There are excellent recipes in every chapter for inexpensive but highly palat-

able dishes. That which treats of "Sunday dinners," contains directions for more costly dainties, such as "roast fowl," "à la mode beef," "rabbit curry," &c., these would disgrace no table. One thing struck me—the fowl was to serve for two dinners—the breast and thighs were to furnish the Sunday's meal, the drumsticks, wings, and neck, that of the following day. Let us hope that something else had been provided for the children, or that the dinner had been preceded by a very substantial lunch! When you come to the "15-cent dinners," you must not expect many luxuries, but there are daily bills of fare for a week. Being ignorant of the prices of different foods in American cities, and also of the habits of working people there, I find it impossible to judge fairly of these *menus*. A few will suffice to quote. Monday—breakfast, boiled Rice with scalded milk; dinner, corned beef and Cabbage; supper, Peas boiled in stock. Friday—breakfast, broth and bread; dinner, mutton and Turnips; supper, Barley boiled in broth.

Miss Corson rather discourages the use of tea and coffee on economical grounds, and hopes to see the time arrive when our working people will use broths and soups as substitutes for these stimulants. It is so difficult to alter the habits of a people, that I think it will be long before this change takes place. She strongly advocates the use of Maccaroni, which appears, from her book, to be sold at about the same price in America as it is here. Our working people are entire strangers to this valuable food, partly on account of its price, and partly because they are ignorant of any of the numerous ways of cooking it. I do not know what she means by saying that yellow maccaroni is better in quality than the white, as we know that the yellow colour is only given to it by saffron. These little manuals are sure to find favour with the educated from the scientific manner in which they treat the subject, and we hope that in this manner they will reach the class for which they are more particularly intended.

GARDENING FOR THE WEEK.

Stoves.

Climbers.—Where plants for draping the rafters, covering an end wall, or for using in any similar way, are employed in the stove, they should now be gone over and cut back sufficiently according to their kinds. This work is sometimes delayed until later on when considerable growth has been made, which is so far a mistake that the growth made has to be cut away, and is so much wasted from the energies of the plants, which naturally break weaker afterwards. In carrying out this operation it is necessary to proceed with discrimination, using the knife the most freely on the strongest-growing subjects, that soon extend so far as to injuriously encroach upon other plants. Strong-growing climbers, such as *Ipomœa Leari*, *Hexacentris mysorensis*, *Bougainvillea*, *Dipladenia*, *Aristolochia*, *Thunbergia*, *Clerodendron*, and the large-leaved *Passiflora*, may be freely cut back proportionate to the size of the plants and the space they are intended to occupy, remembering that in all cases, the farther they can be allowed to extend, the more profusely they may be expected to bloom. Medium-growing climbers, such as *Combretum purpureum*, *Ipomœa Horsfallii*, *Jasminum Duchesnei* d'Oleane, the double and single varieties of *J. Sambac* and *Manettias*, should not be so hard cut in.

Stenhanotis floribunda ought not to be cut back to any considerable extent at this time of the year. What pruning is necessary should be deferred until after the flowering, when all the shoots may be shortened in accordance with the space required to be occupied. Supposing the growth to have been well ripened during the preceding autumn, reduction of the shoots now will proportionately limit the ability of the plants to bloom.

Hoyas.—The twining species of these should only have their shoots shortened either at this or any other time of the year, so far as is necessary to keep them within bounds; for flowering, as is their natural habit, during a series of years from the same spur, whatever reduction of the shoots is carried out in their case also limits the blooming. In cutting back all the above plants it is necessary for the operator to pay some attention to carrying the work out in a way that will admit of the production of young growth over the whole surface which is retained of the plants individually. This can only be effected by shortening the shoots to different lengths in place of, as is often done, cutting the whole back to something near a uniform length, the result of which is that nearly all the young growth made is from the point where they were shortened back to, leaving the lower portion of the branches devoid of fresh shoots, and, consequently, unable to bear flowers, of which it is desirable that an equal production over the whole surface of the plants should exist.

Fine-foliated Climbers.—Climbers that are grown for the beauty of their leaves, such as the different species of *Cissampelos*, *Argyrea*, *Echites nutans*, &c., should be freely cut back, so that the greater portion of the surface they occupy during the summer may be covered with new foliage. It may be well here to remark that the time of cutting in gives the best opportunity during the whole year for giving a thorough cleaning from insects. With these plants it is necessary now to do all that is possible to eradicate these pests, as from the position occupied when growth has fairly commenced there is less opportunity of dealing with them than in the case of non-climbers.

Hard-wooded, Fine-leaved Plants.—There is no greater mistake committed with these subjects than allowing them to get so tall as to be deficient of healthy foliage at the bottom, or in any way to exhibit old leaves wherein is an absence of the fresh, healthy vigour and colour for which they are grown. We often see plants like *Dracæna*, *Aralia*, *Brexia chrysophylla*, *Crotons*, *Capanea*, *Ficus*, *Terminalia elegans*, *Theophrasta*, *Spharogynæ*, and *Cyanocephallum*, in anything but a condition that makes them pleasing objects, for want of heading down when they require it. Now is the best time for this operation, in all cases allowing the soil to become somewhat dry before removing the head. With strong-growing species, such as *Spharogynæ*, *Theophrasta*, and *Cyanocephallum*, that possess a limited number of eyes, it will be found much better to leave from 2 ft. to 3 ft. of stem, cutting the eyes out from the top downwards to within 6 in. of the collar; this will force their breaking near the base, which will insure a handsome stem, well furnished with leaves down to the bottom, and, by leaving a considerable portion of the stem in this way, until the young shoot which is to form the future specimen has made some progress, it will materially assist the young growth, and avoid the chances of the cut-down plant dying, which sometimes results from the whole of the head and stem being removed at once. Plants treated as described should always be placed immediately where there is enough warmth to induce their breaking without delay, as, if kept where so cool as to retard growth, the inevitable loss of roots consequent upon heading down is certain to be further increased; to this frequently may be traced the death of the plants. The headed-down specimens ought to be syringed daily, taking care not to wet the soil too much until they have commenced to grow freely.

Gloriosas.—Where these plants are grown, either as trained specimens or pendent from a rafter, place the bulbs at once where they will start into growth, as they take a good time from the young shoots beginning to push to their arriving at a blooming condition, and it sometimes happens that when the growths are not made sufficiently early, it goes far towards autumn before they flower. It is better not to give them too much pot room in the first instance. I have found them succeed more satisfactorily by potting a second time than at once placing the roots in the fall body of soil they are to occupy.

Fern House.

Structures devoted to the cultivation of Ferns have usually at the present day more or less space so arranged that the plants can be turned out, giving them so far as possible a natural appearance. In the selection of the plants to be thus treated, it is necessary to keep in view the suitability of the kinds chosen for the purpose, both as to their ability to bear shade proportionate to the position each individual plant will occupy by being overhung by others, and also to the size they will ultimately attain. It frequently happens that a want of consideration in this last matter much interferes with their well-being afterwards by some encroaching upon others, which either necessitates disturbance by removal, or a portion are so weakened by overcrowding that they ultimately die. The greatest mistake where Ferns are so grown is the introduction of too many large tree species that inevitably smother most of the weaker small growers and in a few years have not near enough space for their own development. When many specimens of large habit of growth are brought together in a comparatively small house, it not only detracts much from the individual beauty of each but destroys the effect of the whole; unless where the house is large and roomy in every way, it is better to have the tree kinds in either tubs or pots, plunged up to the rims in the beds where the smaller growers are planted out, by which means they can be kept within the prescribed limits, at the same time allowing them to develop sufficiently to exhibit their true character. Another advantage arising from their being grown in this way is that the position of any particular plant, or the whole of the large ones thus grown in tubs, &c., if need be, can be altered as occasion requires, either with a view to afford more room where it may be wanted, or to give a different appearance to the house where a continuous position held by the plants is somewhat monotonous. The present time, when most Ferns are at rest, or nearly so, is the most

suitable for any alteration required in the arrangement, as the smaller occupants which are planted out, some of which there would be a necessity for moving can be taken up and replanted where wanted without seriously interfering with their growth, which removal later on, when their young fronds have begun to push, is certain to do.

Insects.—Here also advantage should be taken of their dormant state to eradicate the insects most usually troublesome—brown scale and thrips. Scale is not easy to cope with on Tree Ferns that are planted out, and unless an attempt is made now when the insects are not increasing fast, and the fronds are in a hard mature state, which enables them to bear a much stronger dressing of insecticide than during the growing season, a deal of labour will need to be expended upon them in the summer. The eggs of thrips can, in like manner, at this time, be more effectually dealt with. The best way to proceed, that I have been able to find, is to dip the fronds singly in a strong solution of insecticide, allowing it to dry on, repeating the operation three or four times before the young growth commences to move; any old fronds that show signs of decay may be cut off, and in this way whatever insects are on them will be got rid of.

Orchids.

Cypripediums.—Many of the spring-blooming kinds, especially the varieties of *C. barbatum*, will shortly begin to throw up their flowers. They are much less susceptible of injury from water, even whilst the flowers are partially enclosed in the centre leaves of the crown, than most Orchids, yet I have seen them rot where, by watering overhead, moisture has been held for some time in the crowns of the plants, consequently, in giving it now it is well to be careful that none lodges in this way.

Trichopilia suavis.—This sweet-scented, early-flowering species will also shortly begin to push up its bloom spikes; appearing, as they do, at the under side of the pseudo-bulbs, it requires care in giving water to keep it from loinging about the flower buds. In the first stages of their development I have found them very impatient of moisture in this way, and it is best now to apply water with a spouted can, by which means, if the plants are potted as they ought to be, higher than the majority of Orchids, moisture can be got to the roots without endangering the bloom.

Dendrobium nobile and **D. Wardianum.**—Where a succession of the first named are gradually brought on to flower, a few more should now be put where they will receive additional warmth and a moderately moist atmosphere, giving little water at the root for a time. *D. Wardianum* that matured growth early in the season will now be showing flower buds prominently, and may have the blooming accelerated more or less in accordance with the time they are required in flower. As the flowers last long, where a successional supply is held in more estimation than a great display all together, it is well not to have too many in bloom at once, consequently, their introduction into warmer quarters must be regulated by this.

Flower Garden.

Auriculas.—With frosts and thaws alternating, it is difficult to know how to treat Auriculas just now. One thing, however, we do know, and that is that it is very dangerous to give any water to the roots. The occurrence of a few mild days showed us that many pots wanted water, and the temptation to give it was great, but, had we done so, the plants would certainly have been injured by the severe frosts which followed in a day or two afterwards. As the temperature seemed likely to fall to a very low point, we had some litter placed against the outsides of the frames, and a mat put over the glass at nights. It is scarcely necessary to remove the mats during the day time if the frost continue and the pots inside are crusted with it.

Carnations and Picotees.—These seem to delight in severe frost; still, when the thermometer threatens to fall down to zero, mats may be thrown over the glass. It is needless to mention that dryness at the roots is conducive to healthiness. Even if the day temperature should not reach so high as the freezing point, if air can be admitted it is as well to do so, as continued closeness of the atmosphere causes spot to appear on the leaves, and in this respect the plants are more liable to injury than Auriculas. Soil for potting ought to be prepared; good turfy, clayey loam answers best. The decayed turf should be torn to pieces by the hand, carefully inspecting it at the same time with the view of destroying all the wire-worms which it may contain. To four parts of loam add one of leaf-mould, one of rotten stable manure, and one of sharp sand, mixing all together by turning the mass over twice; it ought then to be stored in a dry place until it is required.

Dahlias and Hollyhocks.—While the weather is unfavourable for other work, stakes may be prepared. Those made of good Deal,

and painted green, last the longest, and look the neatest. The part underground, and a little above it, should be dressed with a composition of equal parts of tar and pitch laid on boiling hot; even charring the part of the stick that is to go underground tends to prevent decay.

Pansies and Pinks.—Those in beds will require attention during alternations of frost and thaw, as it is at such times that they get injured. Dress the surface of the beds with dry manure from a spent Mushroom bed, which is about the best material that could be used for preventing injury during changeable weather.

Phloxes in Pots.—Plants that were raised from cuttings, and that flowered last autumn, should now be placed, if possible, in a greenhouse temperature. Growth will thus be made earlier, and the cuttings can be taken off, perhaps, a month sooner than it would be possible to do if the plants were protected only by a cold frame. It is rather too early as yet to report, but that operation might, nevertheless, be performed now, if it be likely that the pressure of other work would prevent its being done a month or six weeks later. The potting material recommended for Carnations answers well for Phloxes.—J. DOUGLAS.

Hardy Fruit.

In this department, the ground being still frost-bound, work has come quite to a standstill, at least, so far as the making, renovation, and top-dressing of borders are concerned. It is also too cold for any person to be expected to nail or prune, and no thoughtful person would desire any one to do such work in such inclement weather. There are sundry little operations which may, however, be done now with advantage, such as labelling any trees requiring attention in that way, cutting shreds for nailing, or preparing matting for tying, as the case may be; cutting and pointing stakes for newly-planted trees, preparing the necessary spring protection for wall trees, and repairing netting. The fruit-room, too, may be over-hauled, and all decayed Apples and Pears removed. Some of the latter that are specked are apt to become mouldy; these should be wiped with a soft, dry cloth. *Easter Bourré* is very subject to this mould, and, to keep it sound, it requires to be thus wiped several times in the course of the winter. *Josphine de Malines*, *No Plus Menris*, and *Easter Bourré*, are our best Pears at this date.—W. W.

Vegetable Forcing.

The severity of the weather makes this department of the first importance, for already large quantities of Broccoli are hopelessly damaged. Lettuces, Spinach, autumn-sown Onions, and all the Brassica tribe, look wretched, and the most must now be made of the means at command to fill the gap which is likely to occur in the supply. A hot-bed, consisting of three parts leaves and one of stable litter, should be made up for Potatoes, on which place frames, and plant the Potatoes at once in about 9 in. of light soil. *Fenn's Early Market* (round) and the old *Ashleaf Kidney* are the best kinds for the purpose. A similar frame should be put in requisition for *Early Horn Carrot*, and another for Lettuces, Radish, and Cauliflower. The demand for Asparagus is sure to be great, and fresh batches should be introduced to the forcing pit every fortnight. The crowns now start readily into growth, and a great heat is therefore unnecessary. A bed of leaves only is the most desirable forcing medium, as stable litter taints the Asparagus, especially when that material is used without due preparation, and the same may be said in reference to Rhubarb. If the crowns of these be now covered with Rhubarb pots, old tubs, or barrels, and a bed of leaves made over them, there would be an abundant supply till it could be had from the open air. Seakale is best lifted and forced in any dark, warm situation; a Mushroom house suits it well. It should be kept perfectly dark and not too warm or it grows thin or weakly. It may also be forced the same as Rhubarb in the open ground, but preference should be given to the system of lifting it. To keep up the supply regularly, fresh roots should be put in fortnightly. French Beans are always prized, and where there is proper accommodation for growing them they can be produced in abundance without much trouble. They should be grown in light houses or pits where a temperature of 65° can be maintained. They are best in 8-in. pots, which should have free drainage, and the soil should be light but made firm in the pots. A moist atmosphere is indispensable both for the well-being of the plants and to keep red spider at bay. Sow, to keep up the demand, at intervals of ten days or a fortnight. *Syon House* and *Osborn* are the two best kinds for pot culture; stick them with Birch twigs before they begin to flower, and never let the Beans stay on the plants an hour after they are fit to gather. Tomatoes (autumn-sown plants or cuttings) will now begin to grow freely and will require a warm, dry temperature of from 60° to 65° to set the fruit, after which, they may be freely supplied with tepid guano water, of which, if well

drained, they will take a liberal allowance. Pot culture and winter forcing of Tomatoes are not nearly so much practised as they ought to be. By many, no forced vegetables are more valued, and from the present time onwards are more easily produced. Lettuces and Endive under protection must be kept as dry as possible, or they will soon decay; Chicory and Dandelion help to eke out the Lettuces and Endive, and a few roots of these should be placed for forcing in the Mushroom house every two or three weeks. Mustard and Cress should be sown weekly.—W. W.

ANSWERS TO CORRESPONDENTS.

Conservatory Wall Plants.—Can you recommend me an ever-green flowering creeper to train over the trellised wall of a conservatory attached to the house and leading from the drawing room? The aspect is easterly.—F. B. T. [Try *Lapagerias* red and white, *Camellias*, and *Tacsonia exoniensis*.—S.]

Salt Walks.—What is the right way of using salt to cure weeds on walks, which all last summer were most troublesome, though frequently weeded?—T. P. [Apply the salt in spring when the weather is dry, and be careful not to let it go near Box or Grass edgings. The quantity is immaterial, but enough should be applied to cover the whole of the gravel.—S.]

Lapagerias and Slugs.—I am very much troubled with slugs eating my *Lapagerias*, and as both red and white come up very strong with me, it is disappointing to see them eaten through or even off altogether. Can any of your readers suggest a remedy? I hunt the slugs by lamp-light, and catch a great many; as all my plants are planted out, it is not easy to surround them with water troughs. Would green tree frogs do any good?—T. S. [The best protection we know of is placing zinc collars 6 in. high round the shoots, also wrapping wool round the young shoots inside the zinc.—J. V. & SONS.]

Substitute for Asphalte or Cement (p. 536, Vol. XIV.)—Asphalte and cement are expensive, and there is a cheaper substitute and quite as good, viz., coal cinders pulverised, or even ashes mixed with pulverised chalk and water. For many purposes these are better than cement. For covering walks, &c., they are lasting and cheap.—JEAN SISLEY, Lyons.

Two Best Melons.—“J. W.” who asked (p. 24) for information as to the two best early Melons, must have found himself somewhat puzzled after reading the advice offered him by three good growers as to the sorts named. All three recommend different kinds, and no doubt all believe their varieties to be the very best. Why this diversity on a matter on which there might be expected to be unanimity? If any one had asked for the names of the two best Potatoes, one Kidney and one Round, probably every one would have said in reply, Ashleaf Kidney and Union or Early Market Round. There are six times as many sorts of Potatoes as Melons, and yet three growers recommend as the two best early sorts no fewer than seven different kinds. Why is this? Simply because one Melon is so much like another, in the first place; secondly, because most growers have their favourite kinds; and, thirdly, because some kinds will do well in the hands of one man and badly in those of another. The Melon is perhaps, of all vegetables, the most difficult to recommend. “J. W.” may say, “I cannot grow all the seven kinds, and how am I to select the two best?” One kind, at least (Read’s Scarlet Flesh), is twice recommended, and this is a special point in its favour; he may, therefore, well select this kind for one sort, and, if for a Green Flesh kind, he will grow Heckfield Hybrid or Victory of Bath he will not be far wrong.—A. D.

Rheums.—“W. T. T.” asks if Rheum officinale, of Baillon, and *R. palmatum*, var. *tanguticum* are synonymous. So far as concerns *R. officinale* and *R. palmatum*, they are specifically distinct, but as to the point of distinction between *R. palmatum* and the so-called variety *tanguticum*, I fail to detect any, though I have grown them side by side for the last few years, and, seeing that *R. palmatum* is a native of Tanghut, I think it very probable that the only difference lies in the name: *R. officinale* may, at a glance, be distinguished from the old *R. palmatum* by its leaves having but very shallow lobes and by the inflorescence being more spreading, and the flowers arranged on the branches in a cylindrical manner, while *R. palmatum* has its leaves very deeply lobed; they are also much attenuated, the inflorescence is more contracted, and the blossoms are more loosely arranged. It is by far the most desirable of the two, from a decorative point of view, but both are stately plants and highly ornamental, specially adapted for planting as isolated specimens and also admirably suited for associating with other fine-foliated plants in producing a sub-tropical effect. Both attain a height of from 7 ft. to 10 ft. when in flower.—W. V.

Icehouses.—Will “S. D.” (Vol. XIV., p. 535) kindly tell me where the door ought to be, and whether two are required for packing them to keep out the air, &c.?—W. H. B. [There should be two doors, one at each end of the passage communicating with the pit or well; the space between them should be filled with straw or litter, closely compressed, to keep out the air, and in order to ensure this being done efficiently, it is always advisable when getting any ice out for use, to close the outer door before the inner one is open, as it is not so much the quantity used that diminishes the bulk, as the waste that takes place through a rise in the

temperature, when the outer air is allowed to rush in and displace that of the house. The whole secret of keeping ice is to so pack it around with straw, or other non-conducting material, as to maintain an equable temperature, and if this be done, and the body be sufficiently large, it is an easy matter to preserve ice the whole year through. I am acquainted with a place where they have a very simple and cheap way of keeping it, which is by having a large egg-shaped hole, some 12 ft. or 15 ft. deep, in a gravelly soil where there is plenty of drainage, and this hole except a yard at the bottom, is lined with clay well rammed so as to form a wall, which, before storing the ice is lined with straw in the ordinary way. The roof is made to look like a rustic summer house, by being covered with reeds, and managed in this way it answers the purpose well and is rather an ornament than otherwise. The advantage of a contrivance of this sort is that the first cost is light, but where this is not so much a consideration, a house built after the manner of the one described is by far the best and cheapest in the end, as, except the doors, it is imperishable. These should have good Oak or Spanish Chestnut frames, as those woods are, when in such a trying position of alternate wet and drought, more durable than any other, and the grain being close and solid they are not liable to fungus, so destructive to many other kinds of timber.—S. D.]

Boilers for Small Houses.—I should be glad to know where the boiler described by “A. D.” (p. 7) is to be obtained, whether it is heated by gas or coal, coke, &c., and whether it would be adapted for a house 25 ft. by 10 ft., with a sloping roof from 2 ft. to 3 ft. high. I want to know what kind of boiler and what kind of tubing would be best for such a house, and, finally, what a proper boiler, tubing, and fitting would cost?—A. G. [The boiler in question is known as the Dome-top boiler; it is upright, round in form, has its ash pan at the base, lifting furnace door above, the fire enclosed in the water case, feeding door on one side of the top, and the flue on the other. It is specially constructed to stand in sheds or outhouses adjoining the house to be warmed, the flow and return pipes being carried through the partition wall; thus a certain amount of heat is given off in the shed that may be utilised in many ways, whilst avoidance of heat is generated to keep the glass house well free from frost. Of course the heat so produced will be in proportion to the size of the boiler and the amount of fire required to heat it. A boiler of the size required by “A. G.” would cost about £3 15s., and would heat enough of 4-in. piping for a house of the size named. It can be got at the Thames Bank Ironworks. It is heated either by coal or coke, but the former is found to be at once the cheapest and most efficient. If, however, it is found that combustion is rapid, a mixture of small coke and cinders may be added with advantage after the fire is well burnt up. The entire cost of the boiler, requisite piping—that is, one flow and return—with fitting would be about £7. The addition of another flow pipe would give more heating power, and add perhaps 25s. more to the cost. A special feature of this boiler is that as it needs no setting it can easily be removed, and is therefore specially acceptable to those who have short tenancies.—A. D.]

Names of Plants.—E. H.—The conclusion arrived at as to the name of the portion of pod set is rather unsatisfactory, but in all probability it is a species of *Mucuna*.

Questions.

Fruit Trees in an Orchard House.—Is it advisable to plunge in loam fruit trees in pots that are grown in an orchard house? or is it better to place the pots in the ground? What is the best liquid manure to encourage good fruiting? and when is it best applied?—J. E. W.

Plants for a Small Greenhouse.—What plants can I safely cultivate in a small greenhouse whose winter temperature varies between 38° and 40° Fahr., and which is not heated in summer? What I want are plants that would come into flower all the year round. The house contains a fine Black Hamburg Vine, which does not bear pushing on with heat. It is a lean-to against the northern wall of my garden; therefore, has a full southern aspect, and gets plenty of light.—J. E. R.

How can I best combine Fruit and Flowers?—We have the following houses and frames, viz., three successional Vineries with stages, one Mushroom house with little light, two Peach houses without stages, one hot and one cold, the Peaches being trained on the wall, and one house specially for flowers. This latter, owing to the water tank which heats the other houses, is too damp for plants like *Pelargoniums*. These houses are all lean-to; there are also numbers of frames hot and cold. What would be the best way of combining flowers for the house and conservatory all the year round, and bedding-out plants with the requirements of the fruit? Our difficulty has hitherto been that the flowers are sacrificed to the fruit, for, although we have all degrees of heat, we cannot at some seasons command sufficient light by bringing the plants close enough to the glass. Our present arrangement, which does not keep up a satisfactory supply of flowers all the year round, is to keep Ferns and flowers just coming into bloom in the greenhouse, and keep up at the highest temperature; hard-wooded plants and those in bud in the warm Peach house, having little else in the Vineries than cuttings, seedlings, &c. As I know that this problem, how to combine fruit and flowers, is a constant difficulty in private gardens, will some of your experienced correspondents give us their advice as to what flowers, including cool *Orchids*, it would be best to assign to each house? Also if more glass is indispensable, what would be the best to put up?—A. B.

Spent Bark from Tanneries.—Can this material be utilised in the kitchen or flower garden? also gas lime, or urine?—IGNORAMUS.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

JANUARY 14.

The most prominent features of this exhibition were flowering and fruit-foliaged plants from Messrs. Veitch & Sons, of the King's Road, Chelsea; collections of brilliant blooms of Zonal Pelargoniums, from Mr. Cannell; and groups of Primulas from Messrs. Sutton & Sons, of Reading.

First-class Certificates were awarded as follows—

Amaryllis Dr. Master's (Williams).—A kind with well-formed flowers of an intense orange-crimson, very distinct, and well worth adding to even small collections.

Staphylea colchica (Veitch).—A hardy shrub with white flowers, and of great value for forcing—to all appearances even superior to the much grown *Deutzia gracilis*. It is a plant which will, doubtless, be largely grown for supplying cut blooms at Christmas.

Primula Ruby King (Sutton & Sons).—One of the finest Chinese Primulas in cultivation. The habit of the plant is good, the leaves handsomely cut, and the flowers, which are produced in very large trusses, of a deep satiny magenta-purple, with a rich golden eye.

Cyclamen Reading Gem (Sutton & Sons).—A variety with handsomely marbled leaves and very large purple flowers with broad, pure white petals.

Miscellaneous Plants, &c.—Messrs. Veitch & Sons were awarded a silver-gilt Flora medal for a miscellaneous collection of flowering plants, amongst which were Roman Hyacinths, Tulips, Primulas, Carnations, Lilac Charles X., and the pretty *Crassula lactea* in pans; also fine baskets of flowering plants of *Daphne indica* and *indica rubra*. These were backed up by well-grown plants of *Yucca filamentosa variegata*, Palms, Rhododendrons, and Indian Azaleas. A cultural commendation was awarded to Mr. Cannell for an exquisite stand of blooms of Zonal Pelargoniums, the trusses of which, as well as the flowers, were large, and the latter highly coloured. Amongst others, the following kinds were worthy of special notice: *Mrs. Leavers*, brilliant rose; *Lord Gifford*, bright scarlet; *Louisa*, lilac-pink; *Dr. John Denny*, intense purple, crimson centre; *Circulator*, fine salmon; *Lady Sheffield*, deep rose; *Lizzie Brooks*, crimson suffused with purple; and *J. C. Masters*, purplish-crimson. Mr. Cannell also contributed plants of Primulas, the flowers of which were of a bright rosy-magenta, large, and well formed. Mr. B. S. Williams, of Holloway, contributed *Gymnidium affine*, a plant distinct in habit, form, and colour from any other kind; also well-flowered examples of *Maudslayi polysticta*, finely flowered plants of *Sophronitis grandiflora*, growing on cork; and one of the finest varieties of *Odontoglossum Rossi grandiflorum* perhaps ever exhibited. Mr. W. Brown, Brent Nurseries, Hendon, sent finely grown plants of a white variety of *Primula sinensis fimbriata*, named *Princess Louise*; a deep rose-magenta kind belonging to the same class named *Exquisite*; also a handsome rose-coloured Fern-leaved kind, and a blue-flowered variety named *P. sinensis fimbriata cœrulea*. The same exhibitor likewise showed a group of *Solanums*, remarkable for their dwarf, compact habit and the abundance of brilliant scarlet berries which they bore.

For these and others, a small silver Banksian medal was awarded. Messrs. Sutton & Sons contributed a striking group of Primulas, for which a large silver Banksian medal was awarded. Mr. Overhead, gardener to Sir H. Peek, Wimbledon House, contributed a distinct and charming variety of *Odontoglossum cirrhosum*, which was much admired. Mr. Parr, The Gardens, Harrow Weald Park, showed *Abutilon Yellow Prince*, a compact-habited and, especially adapted to winter flowering. Its blossoms are of a lively lemon color and very distinct; also *Yasminum*, very free-flowering *Abutilon*, resembling *Darwinii*. Messrs. Osborn & Sons, Fulham, exhibited an attractive collection of hardy berry-bearing shrubs. A fine basketful of plants of *Crassula lactea* was exhibited by Mr. Thomson, of the Crystal Palace. Seedling Poinsettias were shown by Mr. Spary, of Brighton, but were considered to be no improvement on existing kinds. The exhibition of ornamental trees and shrubs by Messrs. Lee, of Hammersmith, full particulars of which were given in THE GARDEN (Vol. XIV., p. 571), was still on view and attracted much attention. Two dishes of Seakale were sent by Messrs. Veitch & Sons, one was named *Fulham White*, the other *Lily White*. The two kinds being thought by some identical, they were shown on this occasion to prove that they were distinct; the former appears to be coarser than the latter, and the tips of the leaves are rose, whilst those of *Lily White* are greenish yellow. A dish of large Mushrooms, six of which weighed 1½ lb. was exhibited by the Messrs. Pratt, The Gardens, Hawkstone, Shrewsbury.

Scottish Horticultural Association (Jan. 7).—Mr. John Sadler delivered a short lecture on this occasion on Fungi. He said that the Natural Order to which they belonged contained 1,000 different genera and 25,000 species. Fungi constituted one of the gardeners' and foresters' greatest enemies. They lurked in shady woods and mossy dells. Before their ravages the Potato, Turnip, and Wheat crops and roots of Conifers gave way and timber crumbled; even in the very air we breathe, in the water, food, and medicine which we use were to be found the germs of fungi in teeming multitudes. Their effects were sometimes very injurious, and at other times unspeakable benefits were conferred by their becoming Nature's scavengers. Allusion was then made to the Vine and

Potato disease, and to dry rot. A piece of wood was shown with mycelium running through it. Reference was then made to the aquatic forms of fungi, and of edible and poisonous Mushrooms; 700 different species were reported to be found in Britain. The common Mushroom (*Agaricus campestris*) was the principle fungus used in this country although excluded from Rome. *Agaricus oreales*, *A. prunellus* (or *Peziza* Mushroom, which was used in Rome) and *A. annularis* were illustrated by drawings, as were also the *Boletus edulis*, *Phallus*, and *Morchella esculenta*. The effects of *Agaricus nector* resembled those of intoxication, and the *Boletus Satanas* was also a dangerous fungus. The lecture throughout was illustrated by specimens and diagrams. Mr. McMillan, Broadmeadows, exhibited some fine trusses of zonal Pelargoniums and cut blooms of *Chrysanthemums* in an exceptionally fine condition. The latter numbered thirty-nine of the finest varieties which were planted out in a house to which they are removed about the beginning of October. The Pelargonium trusses numbered twenty-six, all remarkably fine for the month of January, the flowers being large, finely-formed, of great substance, and bright in colour. Mr. L. Dow exhibited Turnip tops which he used as a substitute for Seakale. Some observations on the weather by Mr. Burns, Thingwall, Berkenhead, were read, in which he stated that the most frost registered by him was 24° on December 25. A communication on the same subject was read from Mr. Hugh Dickson, Belfast, where the thermometer stood at zero on December 23.

LAW.

Right to Remove Hedge Briers.—At the Rugby Petty Sessions, a labourer named David Forster, of Brinklow, was charged with stealing a quantity of Briers, value £1, the property of the Duke of Buccleuch. Mr. Wilkes, solicitor, Coventry, defended. Evidence was given by Mr. Rose, gamekeeper, as to defendant taking about 150 Briers from All Oaks' Wood, and Mr. Superior, the farmer said the Briers were sold to nurserymen for Rose tree stocks. Mr. Wilkes raised a novel point, by saying that no offence had been committed against the Act under which the summons was issued, as Briers did not come under the definition of trees, saplings, or underwood, as set forth in the section, and it was no offence to steal them; and he called Mr. Bradford, farmer, who said Briers were of no value but a nuisance; and Mr. B. Fitter, farmer, said in his opinion Briers were hedge weeds, and not underwood, and he was very glad to get rid of them, and the former witness added that he had given defendant permission to take them out of his hedges. Mr. Wilkes said, on a point of law, no evidence of *animus furandi* had been given. Defendant was fined £1 10s., including costs.—"Journal of Forestry."

Milk of the Cow Tree.—Alexander Humboldt remarks that among the many wonderful natural phenomena which he had during his extensive travels witnessed, none impressed him in a more remarkable degree than the sight of a tree yielding an abundant supply of milk, the properties of which seemed to be the same as those of the milk of a cow. The adult Indians would go each morning with their slaves from the village or station on the slope of the mountain chain bordering on Venezuela, where Humboldt was stopping, to a forest where the Cow trees grew, and, making some deep incisions into the trees, in less than two hours their vessels, placed under these incisions, would be full. The tree itself attains a height of from 45 ft. to 60 ft., has long alternate leaves, and was described by Linden as *Brosimum galactodendron*. The milk which flows from any wound made in the trunk is white and somewhat viscid; the flavour is very agreeable. Some time ago, on the occasion of M. Boussingault going to South America, Humboldt requested him to take every opportunity of investigating this subject. At Maracay the tree was first seen, and for more than a month the most excellent qualities were daily tested in connection with coffee and chocolate; but there was no opportunity for a chemical analysis. Nor does such appear to have occurred till the other day when, among the many curious matters exhibited by the Venezuelan Government at the Paris Exhibition, there happened to be several flasks of this milk, and after a long period M. Boussingault has been enabled to complete his analysis of this substance. In a memoir laid before the Academy of France he states that this vegetable milk most certainly approaches in its composition to the milk of the cow; it contains not only fatty matter, but also sugar, casine, and phosphates. But the relative proportion of these substances is greatly in favour of the vegetable milk, and brings it up to the richness of cream, the amount of butter in cream being about the same proportion as the peculiar waxy material found in the vegetable milk, a fact that will readily account for its great nutritive powers.—"Times."

Rogieria gratissima.—This is not so tender as has been supposed. We are informed that formerly in the York Nurseries, this Rogieria used to be treated as a stove plant, but with such poor success that it was hideous to behold. It was then removed to a cool house and planted out, where it has done remarkably well, and has for the last three years or more been quite an attractive object. The temperature of the house where it is growing in winter is from 35° to 45°; and it is in such artificial heat is just simply to keep out the frost in severe weather.—"Gardeners' Chronicle."

We have great pleasure in being able to confirm the statement first made in THE GARDEN that Mr. John Sadler has been appointed Curator of the Edinburgh Botanic Garden.

No. 375.]

SATURDAY, JANUARY 25, 1879.

[Vol. XV

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—Shakespeare.

"TREES OF THE FUTURE."

Few trees have suffered more at the hands of their admirers than the Deodar (*Cedrus deodara*). Planted high and dry on mounds or in low and undrained positions it has too frequently paid the penalty of its fatal gift of beauty, and sunk into premature decline and death. For more than forty years has this tree been praised for its gracefulness and colour in its young state; forty years hence will it have the same reputation that it now enjoys? The principal charm of a full grown tree lies in its habit, whether it be tall and slender, or massive and spreading, as a Cedar of Lebanon; and it is the latter that we associate naturally with the Cedar; so I venture to ask the multitude, not the initiated few, is it generally known that the Deodar is not a tree of spreading habit? In its native Himalayan gorges it thrives where deluging rains alternate with sultry heat during the period of its growth, and under these conditions of shelter and moisture it shoots up with a lofty trunk and drooping tiers of adpressed side branches to a height of 150 ft. before it begins to form the branching, forked head characteristic of the Cedar family, but which it reproduces only on a very small scale. We have already in the Cedar of Lebanon a tree that is unrivalled in the grandeur of its branching head; and, unless the Deodar succeeds in resisting the stunting influence of winter gales, so as to assert its superior height and stature in mature growth, we shall have neglected one of the grandest trees in Nature, for a tree that not only is not more beautiful but is one that will only cometoreal perfection in the most sheltered valleys of Southern and Western England. A glance at some of the oldest Deodars, notably those at Kew and at Blenheim, will show how far a Deodar in an average situation falls short of the stature and grace which it shows in its native forests, and how on the other hand, the Cedars of Upper Gatton or of Warwick Castle reproduce, in the most perfect way, the grandeur of their growth on the slopes of Lebanon. The real wonder is that a tree that thrives in company with *Rhododendron arboreum* and other forms too tender for an English climate should have been found hardy in this country, and given us so much beauty in a young state. Before leaving the Cedar family, *Cedrus atlantica* deserves praise because it has shown itself to be a hardier tree in the north of England than the two preceding ones. On cold soils and in exposed situations, where those just mentioned barely exist, *Cedrus atlantica* makes a sturdy vigorous growth that will always render it welcome where variety is sought for, and bids fair to make itself a name among exotic trees that require neither coddling nor protection.

The next tree that occurs to me, in these erratic wanderings, is a native of the southern hemisphere, and differs so widely from those mentioned before that it has not yet attained the position to which it is entitled, although it was introduced at the end of the last century. I mean the *Araucaria imbricata*. This tree, from the breezy uplands of Chili, is the only representative of its family that can find a place in our gardens—a family that can boast of the towering Norfolk Island Pine and the equally stately *Bunya-Bunya* (*Araucaria Bidwilli*), the pride of Queensland forests. Here we have a tree that thrives equally well on the coldest and most exposed hillsides of the north, and on the warmer soils and situations of the southern half of the kingdom. All who have had the privilege of seeing it in its native country are loud in their praises, both as to the value of its timber and the stateliness of its port when old; and those who, in this country, have seen it at Dropmore, Belvoir, and other places where it has attained sufficient age and growth to judge it fairly, will acknowledge that, of all Coniferous trees planted in this century, this is the one that must bear the palm in years to come. Stiff and ungainly as a young seedling, skeleton-like and formal as a young tree, it is

the most perfect example of the ugly duckling of fairy story; but we have here a tree that becomes in mature growth an object of the highest beauty, whether we admire the Fern-like grace of its massive lower branches, or are astonished at its growth in the Chilean forests, where, in old age, the lower branches decay, and the top expands into the mightiest "umbrella" among Pines, with so level a head that, from a distance, the forest looks like a deep green lawn made by no mortal hands. Its power of withstanding violent gales is unrivalled, as it presents so small a surface to the wind, and thus it thrives where other trees are blown to pieces; but, like every tree, it has its peculiarities, and refuses to flourish where smoke at all taints the air, or salt spray can touch it, and is more at home on the exposed upland than in the level plain. Planters should beware of the male form, which, though handsome in early days, makes only a small, stunted tree, and never attains the proportions of the other sex.

If it be true that it is from California we have obtained the largest number of ornamental trees, *Cupressus macrocarpa* must certainly be mentioned as one of the most valuable from many points of view. Introduced about thirty years ago, it has the rare distinction of having proved itself in that short time more rapid and vigorous in growth in our moist climate than in the drier one it came from in California. On the windy heights of Porto Pinos that overlook Monterey Bay, where the headquarters of this *Cupressus* are to be found, it is a stunted wind-blown tree with spreading, horizontal branches and thickened trunk that tell of the barren soil and the fierce north-west wind, as well as the rainless climate against which it has struggled. Nourished by frequent sea fogs, long hoary Lichens hang beard-like from the leeward branches, and make a strange contrast with the rich green foliage of these groves now so sought after by pleasure-seekers, who here find a cool retreat from the inland heats of a Californian summer. In a position such as this, where the drifting sand whitens the ground this tree does not attain a greater height than 30 ft. or 40 ft. even in old age; but, growing as it does where no other tree could exist, it may well be imagined what a future must be before it for all seaside planters; and at a little distance from the shore, where, instead of a one-sided struggle for existence, it can spread out its branches evenly, what a beautiful tree it is! Its greenness of foliage, coupled with extreme rapidity of growth and beauty in a young state, have long since made it a great favourite in the south-west of England and Ireland, where already it surpasses in height its progenitors in Monterey Bay. Unluckily there has been a prejudice against this tree on account of its supposed inability to stand severe frost, because in the extraordinary winter of 1860-61 many young specimens were killed in all parts of the kingdom. Since then established trees have not suffered, and it may be confidently asserted that it is hardy in all but the dampest and lowest parts of the kingdom, as a tree that grows naturally on a dry soil will always be rendered tender by being planted where it is saturated with excessive moisture at the root. As a seaside tree on all parts of our coast, where protection can be given for the first few years of its existence, it is quite unrivalled, and as it bears clipping admirably it forms a valuable shelter from the wind when planted as a hedge, just as the hedges of the European Cypress afford shelter from winter winds in the south of France. To the slender grace of the Deodar and the stately grandeur of *Araucaria imbricata*, the spreading and yet delicate growth of this green Cypress forms a delightful contrast, and in combination makes the most charming foreground to the two former Conifers, a trio of most distinct and beautiful trees. There is also a variety that assumes a pyramidal form and makes an exceedingly handsome specimen in places where no Cedar or Deodar could thrive. In some form or other no garden should be without this tree, which, like our native Yew, accommodates itself to so many purposes, while it outvies it both in rapidity of growth and brightness of colouring. Even on the north-east coast of Yorkshire it seeds freely at a short distance from the sea, and numbers of young trees have been raised from its cones, thus showing its entire suitability to our climate.

The other Californian Cypress (*Cupressus Lawsoniana*) is so well known and universally planted as to deserve no further comment. It forms a columnar tree of glaucous colouring,

and thrives everywhere in these islands, but in old age it is not so bold and effective a tree as the former from what I have been able to gather. Its beauty in a young state, and its perfect hardiness, will, however, always insure its being largely planted.

E. H. WOODALL.

QUALITY OF WELLINGTONIA TIMBER.

THE wood of the *Wellingtonia gigantea* is considered utterly valueless in California. It is so brittle that it is said a tree will break off by its own weight when the bark, which is extremely thick and tough, has once been cut through all the way round the trunk.

E. H. WOODALL.

— It does not require much knowledge of timber for any one to see that the wood of *Wellingtonia gigantea* is comparatively worthless so far as durability is concerned, at least, if put to any of the present uses for which deals sawn from the different kinds of Pinuses are now in request. The grain of the *Wellingtonia* is short and brittle, as may readily be seen by the way in which its branches snap when touched or exposed to much wind, and wood of this character, even when fully grown, is neither strong nor lasting. It is not always, however, that the value of timber can be judged by its hardness or texture, as it often occurs that such as are soft and easily worked up fetch the best prices. Mr. Baines cites an instance of this in the Sycamore, the wood of which is in request for machine rollers, and I have known Alder in places sell uncommonly well for turning purposes, such as making toys, pill boxes, &c., as well as broom heads and similar articles. In wet land districts I know of nothing more profitable to grow than Alders and Willows, as, besides the latter being used for railway and waggon brakes, it is the only wood of sufficient lightness that will stand the battering of a cricket ball. Rapidity of growth, or the reverse, is not always an index of the hardness and quality of timber, as the Larch and Douglas Fir abundantly prove, for neither of these can be said to be slow growers, and yet their durability under the most trying circumstances is beyond question. So solid and full of resinous matter is the wood of *Abies Douglasii* that it is heavier, size for size, than that of any other Fir with which I am acquainted, and as to rapidity of growth, in favourable localities, where it can have shelter, it rivals the Larch, which, as every one knows, frequently makes leading shoots 3 ft. long in a season. So far as my experience goes, the Douglas Fir has all the good qualities of the Larch with the additional recommendation that it is evergreen, and therefore of greater value in pheasant preserves for these birds to roost on. At one time Spruce was much grown for this purpose, but of all Conifers it is the most worthless, the timber being short and brittle and liable to readily decay. Pinus Laricio and the Scotch Fir can neither be regarded as slow growers, and yet their wood is strong and durable; and the same may be said of many others of a similar character. It appears, therefore, that in this, as in most other matters, there is no rule without an exception. Of all rapid-growing trees the *Eucalyptus globulus* is said to stand at the head; and yet I have been told that in Australia, where the climate suits it so as to ripen it thoroughly, its wood is of the hardest and most durable description, a fact which accounts for the name of Ironwood tree which it bears. Then again, take the Sweet Chestnut, which is almost equal to the Oak in durability, the heart being very close-grained, tough, and hard, and yet it is by no means a slow-growing tree when planted in suitable soil. Other instances might be mentioned, but the above are, I think, sufficient to show that some trees, at least, that are of rapid growth are greatly prized for their timber.

S. D.

— It is probable that at the time when Mr. Baines (in rashly undertaking to pronounce against the quality of the timber of *Wellingtonia*) advanced the doctrine that the quality (embracing the durability) of timber may generally be estimated by its rate of growth, he little thought of the array of non-supporting facts which "C" has cleverly served up for his consideration. Other instances might be adduced, but meanwhile I will content myself with a few remarks on the timber which gave rise to this discussion—that of the *Wellingtonia*. Respecting its durability, the whole evidence goes to prove it to be of the most lasting description. In an excellent article on "The Distribution of the North American Flora," which appeared in a contemporary last year. Sir Joseph Hooker, speaking of the durability of the Big-tree trunks when fallen, says: "The duration of the dead wood in the forest is very great. I rarely observed signs of rot in the fallen trees which I examined, whilst in similar forests in Northern California I saw gigantic trunks of Silver Firs forming mounds of rotten debris without an atom of sound wood, and this in two years after their fall, as I was assured. I had no date for ascertaining the length of time which any of the prostrate *Wellingtonia* (*Sequoia*) trunks which I saw may have lain on the ground, but Mr.

Muir has supplied me with a very crucial case. It is that of a prostrate trunk with no signs of decay in any part of it, which had been burnt in two by a forest fire, and in the trench between the severed portions of which a Silver Fir grew. This Fir was felled, and had 380 annual rings; therefore to estimate the time during which the *Wellingtonia* trunk had lain uninjured, we must add to the 380 years, the time it lay before the forest fire burnt it in two, and then the unknown interval between that time and the arrival of the Silver Fir seed." Thus its durability, one of the constituents of quality, is favourably settled. There still remain the other two components—strength and toughness to be disposed of. These I am afraid are foreign to the Big-tree timber; it is well known to be "frush," but not worthless. It is easily split, and is capable of taking on a good polish. Is there no use for such timber? Californians seem to think there is, for according to the article already quoted from, "No less than five saw-mills have recently been established in the most luxuriant of the Big-tree groves, and one of the mills alone cut in 1875 two million feet of Big-tree lumber; and a company has lately been formed to cut another grove."

GEO. SYME.

— The few kinds of trees which "C" mentions as affording evidence opposed to what I have said in regard to the timber of slow-growing trees being generally of better quality than that of those which form wood more rapidly, do not affect the question from a general point of view, such as that from which my conclusions were drawn. I am conversant with what bears upon the subject in Lindley's "Theory and Practice of Horticulture," and also with the Test Tables of the Admiralty, in both of which there is a good deal that clashes with every day experience. Take, for example, the slowly grown Oak timber produced in Herefordshire, and that of the same tree from the moist, deep-soiled valleys of Westmoreland, where the wood is formed so much quicker, and ask the opinion of any one who has had experience with the comparative lasting capabilities of each when used for a purpose that would afford evidence within a limited time, such as in gates, gate posts, park railings, or others of a like character, and I am tolerably sure what would be the reply. "C" misses his mark so far that he actually confirms what I have said when he instances the Liburnum and common Elder. It is quite true that both these reach their full growth in a comparatively short time, but when that time has expired, and the maximum of size has been attained, the rate of increase in the wood will still be found to have been slow, from the simple fact that the bulk in both cases is small proportionate to the time occupied in its formation. I was looking at the subject from a general, not from an exceptional, point of view, as I think was evident from what I wrote. Timber containing such an amount of resinous matter as the Scotch Fir and Larch are also both outside the question, and so is the *Eucalyptus* and Teak, both woods produced under very different conditions of soil and climate from ours. Home-grown timber alone is concerned in the matter, and to introduce anything beyond it is calculated to mislead. The question is, in reality, confined to *Wellingtonia*. Does "C" imagine that there are any considerable number of individuals whose observation and experience connected with the growth of timber generally in this country are such as to give weight to their opinions who have any belief that the timber of this tree will be anything above second-rate in quality as compared with that of other well-proved trees? To plant the *Wellingtonia* in limited quantities for decorative purposes is undoubtedly quite right, provided the positions chosen are suitable, which is by no means always the case, often completely the reverse; but those who plant it extensively with a view to the production of timber will not, I think, be much complimented for their wisdom by the generations which follow them, even if the tree continues to thrive for a lengthened period in this country, which, from what I have had an opportunity of seeing in many places, is doubtful.

T. BAINEs.

THE OLETHRAS.

THIS genus of Heathworts contributes to our gardens several highly ornamental shrubs, some of them being rarely seen although their cultivation is remarkably easy and their requirements readily met. The different species are spread over North America, through Central America to South Brazil, Japan, and Madeira. Many handsome kinds come from Brazil and Peru, several of which are not yet introduced to cultivation. All are shrubs or small trees with alternate, serrate leaves and pretty white blossoms borne in terminal racemes or panicles; they most delight in a sandy peat and tolerably moist position. The Japanese and North American sorts make beautiful objects in the front of the shrubby border, the tip of nearly every shoot being terminated by showy flowers. The easiest mode of

propagation is by means of seeds, which germinate freely if sown in sandy peat and kept continually moist in a cool place; layering may also be resorted to, although a couple of years or more are often required before the layers are rooted sufficiently to allow of removal. Some of the sorts, too, throw up suckers which, when carefully taken up, make good plants in a short time. Cuttings of the half-ripened wood, inserted in sandy peat under a bell-glass and kept under shade, root readily in most cases. A great recommendation for the kinds hereafter described is that they are perfectly hardy in this country, with the exception of two or three which are specially mentioned as being tender.

The Alder-leaved Clethra (*C. alnifolia*) was the first of all to find its way to English gardens. In the first edition of the "Hortus Kewensis" Mr. Collinson is said to have introduced this species in 1736. Catesby's first volume was, however, completed in 1732, and in it he describes the plant as then flourishing in the open air at Hoxton. In a wild state it affords wet copses from Maine to Virginia, near the coast and southward. It grows from 3 ft. to 10 ft. high, and in July and August is covered with its handsome, fragrant flowers. The leaves, which are intermediates between wedge-shaped and oval in outline, are entire towards the base and sharply serrated upwards, prominently straight-veined and smooth and green on both upper and under surfaces. The racemes are upright, panicle, and the bracts are shorter than the flowers. Several plants, probably mere geographical forms of this and only differing from it in degrees of roughness, hairiness, &c., have, at various times, received specific names. Dr. Asa Gray, in his "Manual," says: "In the South are varieties with the leaves rather scabrous and pubescent, or white downy beneath."

The Woolly-leaved Clethra (*C. tomentosa*) is confined to the Southern States, and was sent to the gardens of this country from New Orleans by Mr. Drummond. It differs from the Alder-leaved Clethra in its young foliage and branches, the under surfaces of the older leaves, and the flower stalks and calyx being covered with hairy down. In cultivation it forms a small handsome shrub, and, towards the close of the summer, bears very abundantly its racemes of white fragrant blossoms. Its somewhat straggling branches are slightly tinged with red; the leaves, which are about 3 in. long, are dark green, almost glossy above, and hoary with whitish down beneath.

The Acute-leaved Clethra (*C. acuminata*), a tall shrub or small tree, is a native of woods in the Alleghanies, Virginia, and southward, and flowers in July and August. The leaves are oval or oblong-pointed, thin, finely serrated, and from 5 in. to 7 in. in length; in colour they are green above and pale below. The racemes are drooping and solitary, not in clusters; the bracts, too, are longer than the flowers. Mr. Lyon introduced it to this country in 1803.

The Panicle-flowered Clethra (*C. paniculata*), another North American sort, has a truly paniculate inflorescence, the upright panicle lasting a considerable time in full beauty. The smooth leaves are between lance-shaped and oval, and are serrated at the edges.

The Bearded-nerved Clethra (*C. barbiervis*) is a native of Japan, from which country it has been recently introduced to Continental gardens by Maximowicz. It has long, rather oval leaves which are somewhat wedge-shaped at the base, and sharply serrated at the edges. On the upper surface, they are covered with short and rough hairs; on the under, the nerves are hairy, the axis of the principal ones being bearded. The blossoms are borne in upright racemes or panicles, and the leaf-stalks and flower-stalks are covered with rusty hairs. This has proved itself in many places to be quite as hardy as any of the foregoing kinds, all of which are deciduous.

The Tree Clethra (*C. arborea*), being a native of Madeira, whence it was introduced by Masson in 1784, is not so hardy as any of the sorts already mentioned, requiring, indeed, the shelter of a conservatory for its successful cultivation. It is an exceedingly handsome, tree-like, evergreen shrub, and, when planted out in the bed of a conservatory, attains a height of 10 ft. or 12 ft. In pots, however, it is easily kept within reasonable bounds. The leaves are oblong, lance shaped, serrated, glabrous both above and below. The beautiful blossoms, which much resemble those of Lily of the Valley, are produced in spike-like racemes, arranged in panicles, from August to October. This most desirable shrub will grow in any spot from which frost is excluded, and, as a corridor plant, few objects would be more admired. There is in cultivation a form with variegated foliage, and another a miniature of the large-growing type.

The Oak-leaved Clethra (*C. quercifolia*) inhabits the neighbourhood of Jalapa, in Mexico, and has foliage similar to that of

some of the Mexican Oaks. It is a most beautiful evergreen greenhouse shrub, with deliciously fragrant flowers, and requires about the same treatment as the Tree Clethra. G.

GROWTH OF PLANTS UNDER BEECH TREES.

THE discussion on this subject in your columns, shows that there seems to be no subject on which men will not disagree. I think that out of a hundred men acquainted with woodlands, ninety-nine would agree in saying that to plant shrubs under Beech trees would be sheer waste of money. The character of Beech woods everywhere is hollowiness, and though in certain exceptional cases growth more or less vigorous may be found immediately under large Beech trees, it is generally accounted for by side light or air getting well under the boughs of the Beech. There is no place where this question may be studied more profitably than in the New Forest in Hampshire. The undergrowth there is of course natural, and very profuse, consisting of Holly, Butcher's Broom, Furze, Brake, Thorn, Honeysuckle, &c. The growth continues right up to the stems of the Oak trees, but in most cases disappears under those of Beeches, except where the branches are high and the stems bare. Holly and Butcher's Broom seem more tolerant of the shade than any other shrubs. On the other hand Walnut trees, a comparison between which and Beech trees began this discussion, are very troublesome when planted near garden ground, as they send their roots as far and are as exhaustive of the soil in flower or vegetable borders as Ash trees. SALMONICERS.

— Allow me to say that here, Box, Yew, Syringa, and Mahonia, grow most luxuriantly under, and in many cases close to the trunks of the Beech trees, and fine trees they are too. H. W. WARD.
Longford Castle.

— We have some very fine old Beech trees here with the tops well interlaced, and underneath them is as good cover of Laurel as it is possible to have, interspersed with fine Hollies and Yew probably 100 years old—the Beech trees being 150 years old. I have just finished pruning the Laurels, our system being to take out all pieces of upright growth, letting only the flat horizontal branches remain, an operation which is performed once in five or six years. The soil being of very good quality, Laurels thus treated do well, and make one of our best preserves for pheasants, and when Beech nuts are plentiful and the ground covered with snow, wood pigeons flock in hundreds to feed on the nuts protected by the snow-bent Laurel branches. The Hollies and Yew are never as a rule reduced in size, being of comparatively slow growth, and they are not of a compact dense character like those exposed to a greater amount of light.

Killerton, Exeter.

JOHN GARLAND.

— May I crave space to add a few explanatory words on this subject? as it seems to me the real point of the discussion has become somewhat involved. What gave rise to the discussion was my contradiction of M. Lavalée's statement that underwood "throve and flourished" under the Beech, which I said was one of the worst trees for the forest for destroying underwood. I was thinking, at the time, of the misleading nature of M. Lavalée's statement and of the Beech as a forest tree, and my remarks were principally intended as a caution to planters who wished to keep up underwood in their woods without more attention than usual. I was not thinking of isolated Beech trees with tall and naked trunks in pleasure grounds, as appears to be the case at Floors, nor did I ever doubt or say that under such circumstances underwood would not grow; I knew better, and in proof of this I may point to my own statement in a paper that was written by me before this discussion took place, and published in THE GARDEN a month ago. In that paper, in speaking of woodland trees, I state that: "it is simply the dense and long-continued shade of the Beech that kills undergrowth, but that only happens when many Beeches are planted together. Almost anything will grow under the drip of the branches of Beech trees standing in the open park where light reaches the trunk all round. Between myself, therefore, and those who have furnished exceptions, so called, as to plants growing under Beech trees, there does not appear to be much difference, as their experience seems mostly to relate to cases where the Beech trees were thinly scattered on the ground. The question is Is the Beech a proper tree to plant freely where underwood is expected to thrive? and to which I answer, No. In going through a wood where the natural undergrowth is varied and abundant, if one comes upon a bare spot it is sure to be under the far-spreading and interlacing branches of a group of Beech trees. Underwood has once been there, and you may often enough see the remains of it, but it has perished. This is the kind of evidence upon which my assertions are based, and it has not been controverted. In the woods here the underwood, consisting of coppice wood of different kinds is plentiful enough, and the common Bramble renders

the woods in most places almost impassable, except where the Beech abounds, and there vegetation disappears altogether or nearly so.
J. S. W.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS.

Viburnum lucidum.—The plant alluded to by Mr. Scott (p. 57) as *V. lucidum* is quite correctly named, but it is not recognised as a species; it is only a variety of the common *Laurestinus*. The true *V. lucidum* has larger and more leathery, roundish leaves than those of the *Laurestinus*. It should also be somewhat pubescent, as *V. lucidum* is sometimes known as *V. hirtum*. There is a fine variegated form of it, and it has affinity with, if not identical with *V. strictum virgatum*, &c.—all forms of *V. Tinus*. I should say the plant from North America, with thick, shining leaves, is *V. laevigatum*; if the latter be Mr. Scott's plant it will be quite smooth.—T. WILLIAMS, *Ormskirck*.

Variegated Hollies.—I discovered the other day a handsome variegated Holly in the forest of Needwood. It is a sport from a nearly smooth-leaved variety, of erect, pyramidal growth, and I think it an improvement on all existing varieties. The marking (a splash of gold occupying the whole middle of the leaf) is more brilliant than in the variety called Golden Milkmaid. It has also purple stems, which add considerably to its beauty. There are likewise many other finely-marked varieties in this quarter, some of which attain a height of 50 ft.—W. ELLIOTT, *Burton-on-Trent*.

New Forms of *Pernettya mucronata*.—Considerable interest attached to the new forms of *Pernettya mucronata* exhibited at a recent meeting of the Royal Horticultural Society by Mr. L. T. Davis, Ogles Grove Nursery, County Down, and to one of which, *P. mucronata lilacina*, which with two others, is figured in the current number of the "Floral Magazine," a first-class certificate was awarded. We are informed by Mr. Davis that these *Pernettyas* are the result of selection from several batches of seedlings, the first lot having been raised from *P. mucronata angustifolia* many years since. Those exhibited at the meeting above referred to were only a few selected from many varieties so produced, so varied, also, as to present almost endless shades of colour in the berries, combined with much diversity in habit of growth and character of foliage. Mr. Davis has succeeded in obtaining several very pretty varieties with pink and blush-coloured berries, and one almost pure white, that is white with a slight tinge of blush, and there is one distinct creeping type with distinct rose-coloured berries. In making a selection of varieties for distribution, Mr. Davis has paid as much attention to the free-fruited qualities of the plants as to the colour of the berries. The many uses to which these attractive shrubs can be put will naturally suggest themselves. They bear very pretty pure white, Heath-like blossoms, which remain long in perfection, and, from their thorough hardihood and their dwarf and spreading habit of growth, they are peculiarly fitted to play an important part in winter-bedding arrangements, as they can be lifted again in spring or in early summer with perfect safety, and may be kept to any height or dimensions by means of pruning, or the plants can be renewed as readily by cuttings or layers. A charming mixture for a winter bed might be provided by using these *Pernettyas* mingled with such plants as dwarf Box of different sorts, various forms of *Eucynoms*, *Retinosporas*, &c., and they are very effective as a front row to mixed shrubby borders, as an edging to a clump of shrubs, or planted for furnishing narrow borders. They might also be employed for dwelling house and conservatory decoration, though they are most at home in the open air. They are not particularly fastidious as to the matter of soil; they will succeed in any ordinary ground free from lime, but of course would be benefited by the addition of a little peat, leaf-mould, or light fibrous loam—ingredients not difficult to obtain; only in poor sandy soils should manure be used, and then it should be well decomposed. Complaints are sometimes made of *Pernettyas* not producing berries, and it is not at all uncommon to hear people say, "They don't bear berries with us." Mr. Davis finds there are breeds of *Pernettyas* that bear berries more freely than others. At Hillsborough several varieties, such as *fortibunda*, *speciosa*, and some seedlings from *angustifolia*, never show a berry. The common form of *mucronata* is also a very shy fruiter, hardly ever showing a berry in the younger stages of its growth, and only a few at any time, while Mr. Davis states that very many of the new varieties he has raised are perfect masses of berries on plants only a few inches in height, and they continue to fruit bountifully year after year. It is said there is only one form of a white or blush-berried *Pernettya* in commerce, viz., *P. candida*. This is considered to be a distinct species; it is a shy grower and not very hardy, indeed, more suited for a pit or cold greenhouse than for exposure in the open air.—"Gardeners' Chronicle."

NOTES FROM FROGMORE.

THE Royal Gardens at Frogmore are always worth a visit; even at this dull season of the year there is much to interest any one connected with horticulture, and many cultural hints to be gleaned. Frogmore is not remarkable for novelties, more reliance being placed on plants or seeds which have always given satisfaction than on new kinds which have not been fairly tested. Beginning with the fruit houses, we find pot Vines in profusion just showing their fruit, which will be ripe in March or April. They are grown without the aid of bottom heat, the plants being set on slate slabs surrounding a bed in the middle of the house. Other early houses of permanent Vines are being started, and Peaches and Nectarines are being brought on gradually. French Beans are grown in large quantities, both in shallow boxes placed on hot-water pipes at the back of the houses and in the borders of Vineries. For the latter purpose the seed is sown in small pots and afterwards turned out into the borders on ridges of rich loamy soil about 2 ft. apart. Perhaps thus early in the season this plan is no better than that of growing them in pots on shelves, but where such quantities are required as is the case at Frogmore shelf room could not well be found for them; and, moreover, the shelves near the glass are, through planting out the Beans, made available for Strawberries, the earliest of which are coming into bloom. Pine-apples of the Smooth Cayenne type are grown here in excellent style, the fruits being large, well formed, and weighing about 7 lb. or 8 lb. each or more. The Grape room is filled with fine clusters of Lady Downes and large quantities of Black Alicante, and West's St. Peter's are still hanging on the Vines for present use.

Seakale and Rhubarb are required in large quantities in the castle at Windsor, and every available space is now occupied by these esculents. Among other places turned to such account are the trenches round the Pine pits, into which fermenting material is put for supplying heat. The Rhubarb and Seakale are planted on the top of the manure, and the whole is covered by means of hinged wooden shutters. Similar places to these might, in many gardens, be easily made round plant houses, the heat being supplied through sliding panels in the walls of the houses, and if the shutters were made portable, they might be easily removed and replaced by glass lights during summer. The ends of Mushroom houses, too, near which the boilers are set make excellent places in which to force Rhubarb and Seakale. Asparagus is forced in low span-roofed brick beds, heated by hot water and covered with wooden shutters, and in this way good Asparagus is obtained from December onwards. Mushrooms, which are always plentiful at Frogmore are especially so now; they are grown in sunken houses, each of which has four slate stages, running round them one above the other, two or three beds are made up at a time as they become vacant, and by this means a good succession is always maintained. Buttons only are used, and these are cut in quantity every morning.

Plants are grown here chiefly for room decoration or for supplying cut blooms. *Salvias* are largely grown for the latter purpose, and also for furnishing specimens for antique vases in Windsor Castle, a purpose for which few other plants are so well adapted. They are struck from cuttings in spring and planted out in good soil out-of-doors in June. In September they are lifted and potted, and removed indoors as soon as the severity of the weather necessitates such an operation. They are placed in empty fruit houses or similar situations as near the glass as is convenient, in order to keep them dwarf and to prevent the leaves from falling off. The first to bloom is *S. splendens*; this is followed early in the new year by *S. Heeri*, and when this is nearly over—in March—*S. gesneriiflora* comes into bloom, and thus a succession of useful flowering plants is maintained from November till April. *Eupatorium ageratoides* is well grown, and is excellent for vases, &c. Cuttings of it struck in May and planted out during the summer, their shoots being stopped several times, make fine bushy plants for lifting in autumn to flower at Christmas. The blossoms are valuable for wreath making, as they are capable of being twisted into any desirable form. *Habrothamnus elegans* is grown effectively in pots for decorative purposes. Plants of it are struck from cuttings in spring, potted into small pots,

and kept indoors till the weather becomes mild, when they are planted out in the open ground for the summer. Their shoots are stopped several times during the growing season, and in autumn the plants are lifted and potted in 6-in. pots, and placed in the greenhouse, where they become bushy and handsome, and bear a truss of blossom at the end of every shoot, causing the latter to arch in a graceful manner. Such plants are now coming into flower at Frogmore, where they are much prized for placing in vases and in rooms, or in the conservatory.

C. W. S.

NEW OR RARE PLANTS.

BAMBUSA HETEROCYCLA.

THE strange Bamboo to which Mr. Carrière has given the above name, was in the Japanese garden at the Paris Exhi-



Bambusa heterocycla; 1-13th of natural size.

tion. It is a quaint-looking plant, remarkable for the oblique rings in diverse directions. It has almost exactly the foliage of *B. aurea*.

W. B. HEMSEY.

SIR BERNARD BURKE, being for a long time in search of a pedigree with reference to the Findernes, once a great family, having a seat in Derbyshire, sought for their ancient hall. Not a stone remained to tell where it stood. He entered the church—not a single record of a Finderne was there! He accosted a villager, hoping to glean some stray traditions of the Findernes. "Findernes," he said, "we have no Findernes here, but we have something that once belonged to them; we have Findernes's flowers." "Show me them," he replied; and the old man led him into a field which retained faint traces of terrace and foundation. "There," said he, pointing to a bank of garden flowers grown wild, "these are Findernes's flowers, brought by Sir Geoffrey from the Holy Land."

PLANT CULTURE IN MARKET GARDENS.

POINSETTIAS.—During winter, these are the brightest-looking plants that come to the market. They are, however, rather more difficult to cultivate than most market plants, owing to their liability to damp off in a young state. Mr. Reeves, of Acton, is considered the best cultivator of Poinsettias near London, and he devotes several large houses to their growth. The plants, which are grown as dwarf as possible in 5-in. or 6-in. pots, are struck from cuttings taken from stock plants in May and June, and inserted in 3½-in. pots. They are then plunged in bottom-heat in a close, warm house, and after a week or ten days have elapsed, are examined daily to ascertain if any of them have taken root. When this is found to be the case, the plants are immediately removed from the bed and placed on side stages of the houses, as, if left in bottom-heat after having rooted, they are apt to rot off close to the soil; in this position they remain until they have filled the pots with roots. They are then hardened off a little and potted into 6-in. pots and placed in span-roofed houses in a light airy position, where they remain to bloom. The plants are potted in good rich, sandy loam and leaf-soil, kept well watered, receive abundance of air, are allowed plenty of space to grow, and in December, January, and February they form plants about 12 in. or 18 in. in height, thickly clothed with healthy green foliage down to the pot, surmounted by brilliantly-coloured flower bracts; and to see three or four houses, each 150 ft. in length, filled with Poinsettias, all in bloom at one time, as we find them in some of the florists' establishments near London, is indeed a sight, the brilliancy of which cannot well be described. The double-flowered kind is, at present, not much grown for market; but, when it becomes better known, its late-blooming qualities, together with the fact of its lasting in a cut state in perfection for several weeks, will doubtless gain for it extensive culture.

DEUTZIA GRACILIS.—This is one of the prettiest and easiest grown of market plants, and one which is cultivated by all florists who have the means of forcing it into bloom early. Plants of it are obtained from cuttings of the half-ripened wood or by burying the bases of old plants several inches deep in sandy soil. The cuttings are placed in small pots or pricked out in frames, and, when rooted, they are hardened off and planted out-of-doors in a border of rich sandy soil. Those which are layered are severed from the parent plants when rooted and treated afterwards the same as the cuttings. In the following spring, before they break into leaf, they are cut back to within three or four eyes of the base, and during the summer the soil between them is kept well stirred with the hoe and the strongest shoots are kept regularly pinched back. In autumn, if large enough for forcing, the plants are lifted and potted, and placed in a frame or a shed until wanted. They are then introduced a few at a time into the forcing house. Daily syringings and plenty of water at the roots quickly bring them into bloom, and after being hardened off by being placed for a week or so in a cool house, they are fit for market. When grown for furnishing bloom in a cut state, old plants are cut back close to the pots every spring—an operation which causes them to push strong young shoots from the bottom. These, if well ripened, never fail to flower profusely their whole length, and thus form complete garlands of snow-white blossoms.

SPIREA JAPONICA (also called *Astilbe japonica* and *Hoteia japonica*) is, without doubt, one of the best market plants ever introduced. It was for some time grown as a hardy border plant, and as such received but little attention; but

as soon as it was found that it would withstand forcing, it became a favourite market plant, its easy culture, fine appearance, and usefulness for window decoration, securing for it more extensive culture probably than that accorded to most other plants grown for market. As a rule, the roots are imported from France and Holland in autumn, and from Christmas onwards the market is kept well supplied with it in a flowering state. Heat and abundance of water at the roots while growing are essential to its perfect culture. Imported plants of it are by some considered indispensable, and for early forcing no doubt they are best, but that English-grown plants are equal in other respects is proved by the fact that Mr. Maller, of Tottenham, who cultivates from 5,000 to 6,000 plants of it yearly, grows them on his own land at Enfield, and more healthy and floriferous plants could not well be imagined. In spring, the old plants are parted, and planted out in good rich, moist soil in an open, sunny situation, where they ripen their crowns perfectly; they are taken up in the autumn, and firmly potted in 6-in. pots, kept copiously supplied with water at the roots, and as soon as the flower spikes appear the pots are placed in saucers in order to keep the roots perfectly moist. They are forced so as to come into flower from as early after Christmas as is possible until the end of May. Well-grown *Spiræas* of this class in the early part of the year fetch as much as 42s. per dozen, but, of course, as the season advances prices diminish considerably.

SPIRÆA PALMATA is also grown for market, but not in such quantities as *S. japonica*. It is, however, well looked after by some growers, and its puce-coloured flowers and Palm-like, deep green foliage render it a very desirable plant, and one which would, no doubt, pay for more extensive cultivation could it be grown with as little trouble as *S. japonica*. It does not, however, force well, as, if placed in much heat, it grows tall and lanky, and its blossoms are pale in colour compared with those grown in a cooler temperature.

ARUM LILIES.—Few flowers are in greater demand in the market at certain seasons of the year than those of *Richardia* (*Calla*) *æthiopica*, or *Arum Lily*. They are used at Christmas and Eastertide for church decoration, and growers strain every nerve to get in a large supply at those times, as they then fetch highly remunerative prices. Mr. Reeves, of Acton, is one of the largest cultivators about London of this so-called Lily, and he grows his plants wholly in pots, thinking it less trouble and altogether a better plan than that of planting them out-of-doors during the summer, a system practised by some cultivators. All young suckers that are found at the bases of flowering plants are removed and placed in shallow boxes, until they become established, when they are potted into their flowering pots, plunged in cold frames during the summer, kept well saturated with water at the roots, and moved indoors as may be required for forcing. Old plants from which the blooms have been cut are placed aside until their leaves have died down, when they are shaken out and all the toes, as they are termed, or fleshy lobes of the roots, are removed and placed in boxes to be subjected to the same treatment as that just described in the case of suckers. A few weeks before Easter Mr. Reeves has several houses full of these plants, and their thousands of unexpanded, spear-like heads form an interesting sight; but to see their white, trumpet-shaped blossoms fully developed is, to say the least of it, a grand spectacle. *Arum Lilies* in 5-in. pots, with two or three heads of bloom fetch from 12s. to 20s. per dozen early in the season, but later on they are sold at a much cheaper rate. *Richardia maculata*, another

Arum Lily, is fast gaining popularity as a market plant. Its leaves, which are spotted with white, are equal to those of many of the *Dieffenbachias*, and the flowers, though not so large as those of *R. æthiopica*, are, nevertheless, quite equal to it in every other respect. This variegated kind requires a little more heat than the green-leaved sort, and it cannot be forced quite so readily. It is, however, an excellent room plant, and good dwarf plants of it in the market do not long remain unsold. C. W. S.

THE KITCHEN GARDEN.

EARLY RADISHES.

EVERYONE who possesses a garden, be it large or small, should endeavour to secure a few early Radishes. In the spring season a good Radish is most enjoyable, as it has then a better flavour and is more tender than during the hotter months of the year. In moist seasons Radishes are good the whole summer through, but in hot parching weather considerable difficulty is experienced in obtaining a free, quick, succulent growth. Those who are fond of this esculent should therefore lengthen the season during which it is in use by commencing its culture early in the year.

Early Radishes are best raised on hotbeds, but they may be grown both in cold frames and in the open ground. The earliest, will, of course, be grown on hotbeds, which should be prepared about the beginning of the year. Only a mild and gentle heat is needed, just sufficient to induce free germination, and promote a healthy growth. A strong forcing temperature will have the effect of developing leaves at the expense of the eatable portion. The seed should be sown upon 6 in. of ordinary light garden mould, covering it with some finely-sifted soil, and gently moistening it with warm water. As soon as the plants are above ground, ventilate as freely as the weather will permit, so as to secure stocky, sturdy growth. When the second leaf has been formed thin them out to about 3 in. apart which will allow room for their proper development. If sowings be made at intervals of a fortnight, during January and February, a good succession will be maintained until they are replaced by early outdoor crops. When sown in cold frames choose a sheltered but sunny situation, such as a well-drained border, and if the soil be not naturally very friable and rather light, some specially prepared mould should be put in the frame. By covering up at night and ventilating carefully, these sowings will come in considerably in advance of those made in the open air and will be found very acceptable.

To insure success in the open ground the soil should have received some previous preparation. It is of the utmost importance that it should be in a free, sweet, porous condition at the time of sowing the seed; no method more effectually secures these conditions than throwing the soil up into sharp ridges early in the winter, or, better still, during the autumn months. Wind and frost then penetrate it and thoroughly pulverise it, so that when levelled and put into order for sowing, it will be found to be in a good workable and friable state. The importance of this preparation of the soil for early crops is not, in a general way, fully realised, but it must be borne in mind that both germination and root-action are very sluggish at that time of the year. A dry, warm situation should be selected, sheltered, if possible, from east and north winds. Choose a day for preparing the seed-bed when the soil is in a fairly dry condition. Mark out a bed 4 ft. wide, the length being at the discretion of the grower. Turn the soil over with a steel fork, breaking all the lumps, and finishing off by raking it level. Sow the seed thicker than would be done later in the season, so as to allow for losses. The bed should then be covered with straw, or some Hazel rods may be bent over it and mats laid thereon. As soon as the plants appear above ground, the covering must be removed during the day and replaced at night. If strict attention be paid to this latter detail, a fair crop of early Radishes may be secured. Market gardeners grow a great many in this way, and they pay well for the extra labour has expended on them. J. CORNHILL.

VEGETABLE FORCING.

THE INDOOR GARDEN.

STOVE EUPHORBIAS.

BRIGHT-COLOURED flowers in winter are always in request, and they are all the more valuable when of a persistent character like our stove Euphorbias. Two of the most useful and best known are *E. splendens* and *E. jacquiniæflora*. The former is very easy to cultivate so as to have it in bloom in winter, when for bouquet making its flowers will be very valuable mounted on wire. To secure a free-blooming winter habit, the plants should be moved to the greenhouse by the end of June or beginning of July, and be fully exposed to all sunshine. If turned out-of-doors for a fortnight or three weeks in August, and placed in a warm, sunny corner, no harm will be done, as such treatment seldom fails to insure an abundant bloom when moved back to the stove. The long sprays of *E. jacquiniæflora* are well adapted for filling vases or other purposes of decoration; and, for the supply of armfuls of sprays for cutting, it should be planted out in a moderately warm house, in a light position. It may be treated as a wall plant, or be trained up a rope, or be planted in a thicket over an old hotbed, in a propagating house, or Melon or Cucumber pit; in short, it will do anywhere where it can have warmth and moisture to make its wood, and a drier atmosphere and plenty of light afterwards to ripen it. To grow it well in pots, the cuttings should be put in early in February, and be brought on in a warm house or pit near the glass. Starting them early permits of their being pinched back several times, thus securing a base that will produce a good number of flowering shoots. By varying the times of pinching, the plants can be had in bloom early or late, as required; and, after the first blooms have been cut, other smaller shoots will push out below that will flower later on in the season. The plants are easily propagated in spring. Young shoots, from 2 in. to 4 in. long, taken with a heel of old wood and inserted round the sides of large 3 in. or 4½ in. pots in sandy soil, and plunged in a brisk bottom heat, will quickly form roots, when they may be lifted out of the propagating bed, and as soon as hardened a little, be potted off and returned to the bed again, to be grown on to obtain large specimens. The potfuls of cuttings may be shifted on into larger pots without singling them out. Old plants do not flower so well as young ones; therefore few people care about saving plants beyond the second year, unless they are planted out and trained up a wall or under a glass roof, and then, of course, they assume quite another character. *E. splendens* is also easily propagated by taking off side shoots with a little heel of older wood attached. As they are very milky, the wounds should be allowed to dry a few hours before putting them in. One of the best plans I know for propagating this and similar plants is: after the exudation of the sap has stopped, and the wounds have become dry, thrust the ends of the cuttings into a warm, moist bed of sawdust, Cocoa-nut fibre, or tan, where the temperature is about 80° or so. March is about the best time for taking off the cuttings. Loam and peat will grow these plants well, with a sprinkling of sand added, unless the loam be of a sandy character. I may say all cuttings rooted as I have suggested, in sawdust, must be lifted carefully out and potted as soon as the roots are formed. If delayed too long, the roots may get torn off in taking the young plants out. In such a bed most plants will root in less time than if placed in pots. E. HOBDAY.

WINTERING PLANTS IN GLASS-FRONTED BUILDINGS.

THE description of a winter garden at Vienna (p. 12) reminds me of several structures of a similar character in which miscellaneous collections of plants used to be successfully wintered; indeed, in one particular instance I remember being much impressed with the fresh, healthy appearance of the plants. This was in the Botanical Gardens at Tübingen, where a long structure with a close roof and a high glass front like that of some of our old Orangeries was filled with a great variety of hard-wooded plants. They had, of course, been in the open air during the summer, but they evidently did not find their winter quarters disagree with them. In the Botanical Gardens

ALTHOUGH, except in the gardens of the most wealthy, the early forcing of fruits is not carried out to any great extent, every one who has the convenience of a few pits or frames essays to force some vegetables, and with a little judicious management it is astonishing how many profitable uses such structures may be turned to at this season, and what may be got out of them. If the pits happen to have a hot-water pipe along the front, no better place can be had for Asparagus and French Beans, the latter especially, as planted out there they are in almost as good a position as when growing on open borders outdoors in the summer. Confined to the limited area of a pot, with only a small portion of soil for their roots to feed on, they soon become exhausted and a prey to red spider; but planted out in a bed, with a little fermenting material under them to afford slight bottom heat, there is no end to their bearing. The best for early work is Osborn's Forcing, a most prolific kind, not over-robust, and one that is well adapted for frame or pot culture. If grown in the former way, the rows should be planted about 15 in. apart, and the Beans 6 in. from each other in the rows, which will afford ample room for the sun and air to play between, and thus insure a free setting of the blossoms. In preparing the hot bed, it is necessary that the manure and leaves be well mixed by turning them over a few times at intervals of two or three days, which will moderate the fermentation, and let out the gases that are so injurious to vegetation. This done, the mass will then be sweet and fit for use, and should be trodden regularly and firmly in the frame that there may be no further subsidence. The next thing is to place a few inches of leaf soil on the top, and then any light loam that may be at hand; and when this has got a little warm, all is ready for planting. To save time, where any one has the accommodation of a stove or warm house, it is a good plan to sow and raise the Beans in small pots or boxes, and plant them out afterwards; and if this be done in leaf mould, they lift with such patches or tufts of roots that they scarcely feel the removal, but start away freely in the fresh soil as if nothing had happened to check their onward progress. As soon as they are planted, the top temperature should be kept as near 65° as can be by night, and from 70° to 80° by day, according to the state of the weather, as there is nothing gained in forcing by a high degree of heat, unless there is light and sun in proportion, together with plenty of atmospheric moisture. This may be maintained by frequent syringings, which should always be done both morning and evening, whenever the weather is bright. A frame made up in the way described is not only good for Beans, but it is just the place for Asparagus, roots of which may now be dug up, and the heads ready for cutting within a fortnight or three weeks afterwards. The best plants for forcing are those that made plenty of top last summer, and which are strong and vigorous, with well-developed crowns. In digging these up, it is very important that as many of the roots be preserved as possible, as it is principally on the organisable matter stored up in these that the plants have to depend till fresh feeders are formed to assist in pushing up the several heads or shoots so much prized, and which are looked on as such a delicacy at this season. Instead, therefore, of using a spade, as is generally done in the operation of lifting, a steel fork should be made choice of, as with a tool of this kind the soil can be worked away in a regular and systematic manner, and the plants got out with little or no injury. As it is always desirable to make the most of the space under glass, the plants should be packed as close as they can be got together; and, in order to fill up the interstices between, the best way is to scatter a little soil, when, by keeping the lights closed and darkened, the seeds will soon germinate, and must then have air to keep them from becoming drawn. As forced Carrots are used as soon as they are about as large as Radishes, they may be left to grow without much thinning, and by taking the most forward at each pulling, room is then afforded for the others to come on.—"Field."

Tomatoes in Winter.—Like Mr. Gilbert (p. 45), I find Tomatoes to be a most useful addition to our supply of winter vegetables, and if such winters as the present were the rule instead of the exception we should have to devote more space under glass to similar subjects. I find Vick's Criterion most useful for pot culture. It is beautiful in shape and colour, and it sets and bears freely during the winter months.—J. GROOM.

Drumhead Savoy.—I find this to be most valuable this year for supplying a large amount of green vegetable food. In mild seasons, when Broccoli is procurable all the winter, Savoy, Kale, and similar hardy greens are at a discount, but now, when tender vegetables lie frost bitten and useless, hardy Savoy and Kale are appreciated. There is a general impression that Savoy and similar greens are not fit for table until after they have been frozen, which, if correct, may account for their excellence now; but probably their value is more enhanced by the scarcity of other vegetables than anything else.—J. G.

of Stuttgart, I saw a similar structure filled with the more hard-wooded kinds of stove plants, such as Palms and Pandanads, and I must confess that I was astonished to see them so green and healthy. The fact is, one is apt to be deceived with respect to the amount of light which the interior of such structures receive during the winter months. My own observations subsequently led me to the conclusion that the difference in the amount of light which would naturally exist between structures of this description and glass-roofed houses, was hardly in proportion to that experienced during the summer months. There is in the Villa Berg Gardens at Stuttgart a large Orangery, the front windows of which are some 10 ft. in height. The Orange trees were placed upon platforms at the back of the building, occupying about one-half of the area; the remaining space was filled with New Holland and other plants, and shelves attached to the windows with flowering Primulas. The plants all kept well, and the Primulas and similar plants were, to all appearance, as good as those kept under a glass roof. When there was a glimpse of sun in midwinter, I noticed that it illuminated the greater portion of the interior, rendering it quite bright and cheerful. But the most noticeable fact in the affair, and one which I repeatedly observed, was that whilst the morning and evening sun shone into the Orangery, the winter gardens which flanked it were quite deprived of its influence. All three structures had the same aspect, but the sun being low in the horizon its rays easily shone in at the upright windows of the Orangery, whilst they failed to penetrate the curvilinear roof of the glass houses. I then understood why plants should winter so well therein, and although I would, of course, prefer the convenience of a glass roof, I should have no hesitation in storing hard-wooded and any robust kinds of bedding plants in structures into which no light could be admitted through the roof, but the windows should be high, very light, and kept perfectly clean. The upper portion of the sashes should open the whole length of the building, so as to insure a free circulation of air without draught, and as there is no drip, and the windows are protected with wooden shutters, there will scarcely ever be need to make a fire. The almost entire absence of fire-heat, which, when applied, always exercises a more or less stimulating and, consequently, prejudicial effect on plants which should be kept quite cold, induces in bedding plants a complete state of rest, and, when turned out in the spring, they will be found to be very hardy.

I have been induced to make these remarks, believing that they may prove of interest to some who, being, perhaps, deficient in regard to glass space, may possess, and would willingly utilize, some such structure as I have described. In their interest, mainly, I have written, although there are few places, large or small, where storage is not a consideration, and even if there should be any hesitation in trusting soft-wooded plants in such places, there need not be the slightest fear of hard-wooded kinds being injured by a winter residence therein. J. CORNHILL.

HEATING AND VENTILATING IN COLD WEATHER.

MR. FISH has done well in calling attention (p. 30) to this subject for of all the waste of force that takes place in gardens during winter that of the loss of heat is generally one of the greatest. It frequently occurs that as soon as those in charge of the fires see a little frost in the morning they rush to the stovehole and heap on fuel, be the sky ever so clear, and by so doing manage, by the time the sun is well up, to get the pipes so hot that the two together render the temperature so high as to be almost unbearable. Then air is given in abundance, chilling the plants and letting out the atmospheric moisture so essential to keep them in health. Now, giving air in the dead of winter, except during exceedingly mild weather and where houses are more than usually close glazed, is a mistake, as, in the generality of cases, there is more than sufficient passes in through the laps of the glass and other places, the tendency of heated air being to ascend continually and the cold to rush in to displace it. The very fact of having the interior of a house warmer than outdoors causes ventilation through the motion which it imparts, and as it is of a more regular and gradual kind than that obtained by letting down the lights, it is much better in every respect. If we can only draw in solar heat a certain amount of fuel is saved, and it is more congenial

to the plants than that obtained from pipes or by any other artificial means. With plenty of light, as there always is when the sun shines, it matters little about the thermometer running up 10° or 15° higher than usual, and by watching the weather and getting the sun to aid us we can always husband our forces and in that way save fuel. I always endeavour to impress on those in charge of the fires to keep them in abeyance till they see how the day is likely to turn out, when, if dull and cold, they are moved on slowly to reach the maximum of heat allowed by about 1 or 2 o'clock, after which they gradually fall away again for the night. If the sun be likely to break out they are stopped so as to keep the pipes as cool as possible till towards the afternoon, when they are started so as to meet the falling temperature and prevent it from going too low suddenly, thus making the best use of the light. Excess of artificial heat is one of the main causes of plants being infested with insects, and more particularly is this the case if attended by excessive dryness, a sure forerunner of thrips and red spider. Even if plenty of moisture can be kept up leaves become thin and flimsy, and especially is this so as regards Vines and Peaches forced early, while as to flowers obtained under such conditions, they are of the most fugitive character, and soon fade if cut from the plants. Not only is there a great waste of heat by having the fires going when they should not be, and the ventilators open to let it out, but much loss arises by letting the warmth that should be confined about the boiler escape up the chimney, instead of being expended in imparting heat to the water. If, instead of asphit doors being wide open, and dampers out, the former were closed and the latter pushed nearly in, combustion would go on at a slow rate, thus making the fuel last double the time it does when a great rush of air passes through the furnace. This not only carries the heat with it in its course, but helps to cool the several parts as it travels on to the shaft, to which it speeds its way at a rate of which few have any conception. Of course a certain amount of draught is necessary to get the fuel alight and a clear fire going, but, once this is effected, the object should be to keep its strength and energy about the boiler, and there get as much out of it as possible. The damper and asphit door give one full control, and if coke, breeze, or cinders be used with the coal in about equal proportions the flues do not become foul so quickly as they do when the latter alone is burned, the tendency of the dense smoke being to cause a tarry deposit to form, which, when it becomes thick and coated with soot, is almost impervious to heat.

S. D.

Early-forced Lilacs.—There are few plants that are forced into bloom much beyond their ordinary flowering season that are more generally appreciated than Lilacs. Although one of the easiest plants to force, there is considerable difference in the time which different varieties take to produce blooms fit for the flower basket, more especially very early in the season. I have placed plants of several varieties, for cutting from at Christmas and onwards, in heat, as soon as they had shed their leaves, and I found that the Persia kind was in full bloom before such large-flowering kinds as Charles X. had scarcely begun to expand. Later in the season the difference was not so marked, but, as a rule, the kinds with small, slender, twiggy growths submit most readily to the quickening influence of heat, but after this season of the year large bushes of the common Lilac, taken up with good balls of earth and placed in the gentle heat of a Vinery or Peach house, answer perfectly. If required with white or blanch flowers light must be excluded from them, or else they must be forced very rapidly in a strong heat, which has the effect of producing the flowers so quickly that they contain no colouring matter.—J. Groom, *Lincoln*.

Monstera deliciosa in Water.—This interesting *Arad* is never seen to thorough advantage, unless it is so placed that the roots have free access to fresh, pure water. There was formerly a very fine specimen in the Garden de la Muette at Paris. It was planted out near a water-tank in one of the plant structures, the stems turning round and covering an old tree stem, and the roots descending into the water below. It never had, I believe, any shade afforded it, pure air being left on the house during the summer, and an intermediate temperature only maintained in the winter. When I saw the plant, in August, it was completely studded with its cone-like fruit, and certainly presented a highly ornamental appearance. When grown in hot, moist stoves, this *Monstera* develops rapidly, and its singular foliage, together with the quaint forms which it often assumes, strike the uninitiated with wonder. High temperature and dense shade are, however, by no means necessary for its welfare; it enjoys a light, somewhat airy position, and when so placed it assumes a more shrubby, compact, short-jointed habit, and may be utilised for the decoration of apartments, corridors, &c. It should always find a place in sub-tropical arrangements, appearing, as it does, quite

happy in sheltered nooks, although most effective when placed near water margins.—J. C., *Byfleet*.

QUISQUALIS INDICA.

THIS sweet-scented stove climber, adverted to in a recent number of *THE GARDEN*, is far less cultivated than it deserves to be. It belongs to the Natural Order Combretaceæ, though very unlike the also far too little known *Combretum purpureum*. Both species, however, rank amongst the most beautiful of climbers. In colour it is a sort of orange-red, also a delicate pink, sometimes almost a white in the shade. This wide range of colour adds much to the beauty and usefulness of the flowers. By gathering them singly, and placing them in the dark in water, they lose most of their colour, but, fortunately, none of their inimitable sweetness. A downy-leaved variety,



Quisqualis indica.

called pubescens, was also introduced from Java about the same time; and two other *Quisqualis*, viz. *glabra* and *villosa*, are also occasionally met with in botanic gardens. *Quisqualis sinensis*, a rose-coloured species, was introduced from Canton in 1841; but it seems to have made but little way in cultivation, though it would probably do well in a conservatory. *Quisqualis indica* is, however, the favourite; and, being all that can be desired in a plant of this description—freegrowing, continuous-flowering, fragrant, and easily grown in a mixture of peat and loam—it is hardly worth while to collect other varieties. We have scarcely a plant more useful, or one more popular, or generally admired than a fine specimen of *Quisqualis indica* on the roof of a small stove; it is generally in flower from May to November.

D. T. FISH.

Sericographis Ghiesbreghtiana.—This is a very useful winter flowering plant, and although generally grown in a stove, in company with such plants as *Euphorbia jacquiniiflora*, *Thyracanthus rutilans*, *Justicia*, &c., it is nevertheless much harder than most of them, and I have found it to succeed quite as well and to flower as freely in the temperature of an ordinary greenhouse. The flowers also remain in perfection much longer than is the case when the plants are kept in a plant-stove.—P. GRIEVE, *Culford*.

THE FRUIT GARDEN.

PRUNING ORCHARD TREES.

It is proverbial that doctors disagree, and doubtless many who read gardening papers come to a pretty correct conclusion that gardeners disagree quite as much, and on no subject more than on pruning. Probably nineteen out of twenty, if consulted, would say that certain trees needed pruning; and forthwith, armed with saw or pruning-hook, one half of the tree is cut away with results which, if satisfactory, are attributed to the pruning; if the reverse, to the season. Spring frosts always account satisfactorily for the absence of fruit, but many other minor reasons for its non-appearance exist, and some of these are doubtless attributable to haphazard pruning. The best trees as regards fruit bearing I have ever had are those that have been pruned the least. Standard fruit trees, if taken in time or looked over annually, only require central branches that cross each other to be cut away and the leading shoots shortened when young. In fact, in this neighbourhood, where Apples are grown extensively and bear enormous crops, the rule is to keep the centre open and let the outer young growth form as near as possible an umbrella-shaped head. Hard cutting of old or neglected trees is looked upon as worse than letting them alone, as old trees, like old people, do not recover from the effects of excessive amputation so readily as younger ones. Cutting off the annual growths of espalier, pyramid, or bush trees that have been continuously so treated is quite another matter, as if skilfully managed they are both ornamental and serviceable adjuncts to any garden. It is, however, to standards that we must look for our main crops, and I would strongly recommend any one having trees in an over-crowded state to cut out any dead wood, or small weakly growth that they may contain, but by no means to saw off large branches. Mulch the roots with good manure, see that birds do not destroy the blossom buds, and await the result. In this neighbourhood, where the ground is very much undulated, aspect has a more important bearing on the crop than in level districts. The orchards most noted here for constant bearing are those that slope to the south-west or west, as they do not catch the sun's rays until the blossom has become thawed and partially dry after the usually short sharp visitations of frost in spring. Much might be done in the way of shelter by planting a belt of evergreen trees on the eastern side of orchards to break the force of winds as well as to catch the destructive early rays of the sun. I may also remark that many of our very best Apples and Pears are wholly unsuited for orchard culture: therefore, if some of the pruning usually given to fruit trees were bestowed on the lengthy catalogues of varieties that puzzle and bewilder intending planters real good would be the result. In every county in which I have yet lived, some special kinds appeared suited to the district, and planters will as a rule find such kinds to fill their fruit rooms better than all the first class certificated sorts that have ever been sent out.

Linton, Maidstone.

J. GROOM.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Pine-apples.—I planted a pit 39 ft. long by 10 ft. wide, with seventy-five rootless suckers. From these the last fruit was cut eighteen months after they were planted, and the total weight of fruit from the seventy-five was 466½ lbs. I may also add that they were only subjected to fire heat ten months out of the eighteen.—M.

King of the Pippins Apple.—Mr. Baines (p. 52) is quite wrong in his ideas regarding the King of the Pippins Apple here. Many have seen and tasted our fruit of it, and all have pronounced it true to name and in every respect excellent. The flavour of Apples is often influenced by culture as much as that of Grapes or even Pine-apples. Young healthy trees, with plenty of nourishment at the root, always produce fine juicy fruit; and keeping the branches well trimmed imparts to it both high colour and flavour. I do not think more need be said to make this Apple more popular than it is, as, if Mr. Baines will refer to back volumes of *THE GARDEN*, which contain reports of the fruit crops from all parts of the kingdom, he will find King of the Pippins mentioned approvingly in most of them.—CAMBRIAN.

PLATE CLXI.

THE TEA-SCENTED ROSE.

Then will I raise aloft the milk-white Rose,
With whose sweet scent the air shall be perfumed.

Shakespeare.

THE newest happiness in the Rosarian's happy life has come to him in the Tea-scented Rose. When first, like Sappho, I was "enamoured of the Rose" (I wonder who sent it to her), we regarded *Rosa indica odorata* as the scholar regards an *Editio Princeps*, or the epicure a barrel of "best natives," or the gunner a woodcock, or the maiden of thirty summers a proposal—it was a rarity, a dainty, a phenomenon, which astonished us, like a kingfisher gleaming over a gloomy stream, and made us sigh "Oh!" and "Well, I never!" like the rocket of a thousand stars! It is true that at the time of which I speak, more than thirty years ago, we had in cultivation some of the most charming specimens of this fair family, such as *Adam*, *Comte de Paris*, *Devoniensis*, *Madame Bravy*, *Niphetos*, *Safrano*, *Smith's Yellow* (sometimes elegantly entitled "*Jaune of Smith*"), *Souvenir d'un Ami*, and *Vicomtesse des Cazes*; but we very rarely realised any of these out-of-doors (occasionally, in a favourable season *Comte de Paris*, *Devoniensis*, *Safrano*, and *Souvenir d'un Ami*); and Mr. Rivers, in his catalogue for 1847, after enumerating the varieties of "these fine and fragrant Roses," gives the prudent warning "they must not be trusted out in winter in exposed situations." Even in pots, and under glass, it was difficult to induce some of them to bloom, and "*Jaune of Smith*," I remember, had a chronic constipation, which no aperient could touch. Many a time, on the eve of a show, have I put him in hot water, and blown into him, as though he were on fire, and might just as well have attempted to open a box of sardines with a piece of buttered toast. The brave Rosarian, who, in accordance with Napoleon's idea of an Englishman, "never knows when he is beaten," persevered against all disappointments; he went on budding his Tea Roses in the summer, and the frosts went on killing them dead in the winter; he took them up and placed them by walls, and covered them with mats, and then transplanted them, looking but sickly, when the perils of starvation were past. He planted them, on their own roots, in sunny, sheltered spots; but the failures were infinite, and the fruitions few. There was a tiny plant of *Adam*, I remember, placed between two Peach trees on a southern wall, which produced a solitary flower, of marvellous beauty and of peonian size, and then gradually collapsed, and—whether from pride or from surprise, I know not—drooped, and died. There were a few glorious Roses, now and then, when springs were merciful and summers hot, on our standard trees of *Devoniensis*—such as my dear old friend, John Keynes, of Salisbury, once showed at Birmingham in his famous forty-eight (trebles)—there were, still more rarely, some precious pendulous blooms upon our *Souvenirs d'un Ami*, there was a greater abundance of *Comte de Paris* and *Safrano*; but many a season came and passed, and we, like naughty children, went to bed without our Teas.

The brave Rosarian lived on in hope—a hope to which some few things might be improbable, but nothing impossible ever. How could there be impossibilities to one who had witnessed the development of form and colour which had occurred to his experience among the Roses? who had witnessed with ecstasy the advent of *Géant des Batailles*, seen the Giant surpassed by the General (*Jacqueminot*), and the General almost extinguished by the glories of King Charles (*Lefebvre*)? What could be impossible to one who had seen the abominable little *Jaune of Smith* fly howling to the

wilderness (that is, the rubbish-heap) before the glowing splendours of our *Maréchal Niel*? No, thus encouraged, he would not despair,

Nor bate a jot
Of heart or hope; but still bear up and steer
Right onward.

Thus fortified, he could learn to labour and to wait, and though he waited long, longer than the lone watchman upon the palace-towers of Argos, when his royal master was besieging Troy, yet waited he not in vain—at last the beacon fires gleamed in the darkness, and "like volcanoes flared to heaven" the signals of a victory won.

When Mr. Prince, of Oxford, introduced the seedling Brier, he also introduced to Rosarians the power and happiness, hitherto unknown, of growing out-of-doors, in sure abundance, the Tea-scented Rose. The Italian stock, called *Manetti*, valuable as it is in many soils, and capable of producing in its "maiden blooms" all the hardier varieties of the Rose in the plenitude of their perfect charms, as Mr. Cranston, of Hereford, has demonstrated so often to our delighted eyes, was a miserable mother to "the Teas" (you might as well have asked one of the bronze lions in Trafalgar Square to act as wet nurse to a young kitten); budded on the standard Brier, or struck on their own roots, they were at the mercy of the first inclement spring; but now is the winter of our discontent made glorious summer by this seedling Brier, and in its custody our Teas are safe.

Here the question may be asked, Do you mean to tell us that, when budded upon this stock, the Tea-scented Rose will withstand a winter's frost? My answer is Yes and No; and I would add, in illustration of my meaning, the Irishman's words, "And shure I did say that they killed and murdered him, but I niver said they murdered him dead." A full explanation shall be given, by-and-bye, to my readers; meanwhile let us commence *ab initio*, let us build from the foundations, in order that we may be as well acquainted with our subject as the ornithologist, who remarked, in my hearing, to his friend at a poultry show, "I tell yer, Thomas, I've know'd that ere Dorking ever since he wor a hegg."

Collect your Hips from the hedgerows in autumn, place them in a flower-pot, and cover with sand to protect from mice, and keep them in a dry place through the winter. Sow in spring. Most probably the seed will remain in a dormant state and make no sign until the spring following, when it will come forth in such force that we have budded here some four hundred in a bed of this year's growth. The budded and unbudded are mixed together in a tangled mass, but the former are in excellent condition, notwithstanding the extraordinary frosts, and will be transplanted when the weather permits.

The buds, (and if the amateur inquires, where are they to be found? I advise him, when he is gathering the Hips, to order from the nurseryman a dozen or so of the best Tea Roses, already established upon the seedling Brier) should be inserted so close to the ground that they may be earthed over, and will ultimately make roots of their own. Whether transplanted, or left in the seed-beds, they must have a good circumference of clear space, say 2 ft. from the stem, for their growth. The first year they will be principally occupied in what we gardeners term making wood, though some may have a few good blooms; but in the next they will, in most cases, flower abundantly, this precaution being always taken (or the consequences will be fatal) to protect them, towards the end of November, with a thick covering of long straw-manure surrounding the stem, and partly screening the lower part of the plant. The upper growth must, of course, be left exposed, and this will suffer accordingly, but no amount of

frost to which we are liable in this country, will cause an entire destruction. In the last few weeks the thermometer in my Rose garden has been thrice nearly down to zero, but my Tea-scented Roses, though frost-bitten in the upper extremities, rest securely, like so many Sleeping Beauties, under their snowy counterpanes, whiter than swansdown, and their warm blankets of— of—a darker hue. And in the Spring-tide, "when the green leaves come again," they will wake to prove my affirmation that they have not been "murdered dead," and that we Rosarians have at last a successful method of growing the Tea Rose out-of-doors. I believe that in the last three summers I have cut, each year, more specimens of this exquisite and delicate variety than in the thirty years preceding, all united. From the altar of my church they have sent up their incense to Him "Whose breath perfumes them, and Whose pencil paints;" they have made my home bright and fragrant; and, to prove that they have been as admirable in quality as they have been abundant in quantity, they have won for me the first prize at the great show of the National Rose Society, held at Manchester in July last.

And now it may interest some of my brother and sister Rosarians if I speak of these Tea Roses individually, selecting those which I know to be most deserving of all the love and care which can be bestowed upon them. We begin, of course, and in spite of Darwin and his monkeys, with Adam, a very large and beautiful Rose, of a soft blush tint, somewhat capricious, like some other blushing belles, if the season is not quite propitious, but making us quite forget half-a-dozen frowns with one resistless smile. Without affirming the identity of this Rose with President as confidently as a French Rosarian, M. Guillot, fils, who begins his list of Rosiers This with "Adam (synonym) Président," I have the consensus of all the brotherhood in saying that the two Roses are very much alike (especially President), reminding me of a negro melody which I heard in boyhood, in which the singer, describing the marriage of our most gracious Queen, narrated how he

Stood close by Prince Albert, and the likenesses were such,
The Archbishop of Cantobury didn't know which was which.

Adrienne Christophle is a most striking Rose from its marvellous combination (I was about to write confusion, but Nature never confuses) of colours, yellow and red, the tints of the Apricot and the Peach, commingled. Aline Sisley is an interesting variety, its rosy-purple blushes contrasting remarkably with the paler complexions of the sisterhood, and there being only two other Tea-scented Roses (of which hereafter) having the same tone of colour. Anna Ollivier is one of those delightful Roses which always seem in good spirits, and anxious to do their best, healthy in growth, glossy in foliage, generous of its waxy, well-shaped flowers, in hue *rose carné*, a warm flesh colour. But what shall I say of Cathérine Mermet? I have read, in an old book of romance, of an exciting young knight who was so astonished and overpowered by the beauty of the young lady who had won his heart, that for some time, whenever he saw her, he made a point of fainting away. By a course of severe training, which he commenced by gazing on the castle in which the young lady lived at a respectful distance, which he gradually decreased, he ultimately empowered himself not only to admire her with his eyes, but to address her with his tongue; until, in an incautious moment, having made her an offer, he was so agonised by joyful ecstasies on receiving an affirmative answer, that he immediately fell down and died. I feel a certain amount of sympathy with this sensitive hero when I come into the presence of Cathérine Mermet, and am invited to describe her charms. I feel "that sort of drop-down deadness" which a certain bishop, according to Sydney Smith,

who was one of his canons, expected and admired in his clergy. I realise in some degree what it might be to "die of a Rose in aromatic pain." As for a verbal description, I am convinced that all the great poets, from Sappho to Tennyson, would have modestly declined it; and all the little poets, from the "poete minores Græci" to Martin Farquhar Tupper, would have made a frightful mull of it. No language is equal to such an undertaking, especially our own, which has been so worn and weakened by the constant use of its most expressive words upon trivial subjects, that there is no awe left in awful, and "oh! how lovely," means little more than nice. Wherefore I will leave our over-worked superlatives at rest and content myself with saying of Cathérine Mermet that both in form and feature, contour and complexion, "she's all my fancy painted her"—perfection. Passing by Cheshunt Hybrid, and postponing my praise until I speak separately of certain Tea-scented Roses, which seem to be more like the Noisette family in their vigorous growth, I am confronted by another exquisite specimen almost as overpowering in her loveliness as "the girl—I mean the Rose—I left behind me." In my hunting days I remember an uneducated *nouveau riche*, who was of a retiring disposition, when hounds really ran, thus endeavouring to account for his disappearance (as duffers always do) during a fast spin over a stiff country. "When I came up to that plantation," he said, "I could get neither to the right nor the left. On the one side there was a tremendous bullfinch, and when I rode to the other I came to a yawning dike; so that, in fact, I only went from Skilley (Scylla) to find myself at Carrybidee (Charybdis)." And such would be my perplexity, as I stagger in dazed amazement from the presence of Cathérine Mermet into the bewildering radiance of Comtesse de Nadailac, were it not for the welcome rescue of a true friend in need—I mean the artist whose admirable manipulations have presented to the readers of THE GARDEN so much of the beauty of the latter Rose. I say "so much," and I am sure that the artist will pardon the reservation, and will agree with me that although

Pictoribus atque poetis
Quidlibet audendi semper fuit æqua potestas,

it is not possible for dictionary or for paint-box to do full justice to this Rose. Very few painters could have done as much. The portrait is beautifully drawn, and the form is given accurately, yet with a graceful taste. There is too much of the golden hue in the petals, but the other tints are exquisitely realised. The English delineation is, in short, an excellent translation of the French description: *Fleur grande, pleine, rose carné luisant, a fond abricoté*, with just a *souppé* too much of the *abricoté*. S. REYNOLDS HOLE.

(To be continued.)

ROSE CHARLES DARWIN.

CONCERNING this Hybrid Perpetual Rose, Mr. Geo. Paul states that it is a seedling of Mr. Laxton's, which some three years ago was placed in his hands for trial. It has proved to be a very fine Rose, with the merit of novelty of colour, having a brownish tint suffused over the crimson, and having a wonderfully decided habit of autumn flowering; indeed, throughout all the quarters, no single variety at this date (September 17) is covered to an equal extent with well-developed flowers. This is evidently due to some Bourbon blood in its parentage. On its merits, we have decided to distribute it next spring. Curiously enough, the English-raised Roses of the last two years seem to be the best of the new kinds. Taking those of 1876-77, Mr. Turner's Oxonian and Mrs. Baker (1876), with our Duke of Connaught and Sultan of Zanzibar, and Mr. W. Paul's Magna Charta, are the new kinds of the year worth growing. Of 1877, nearly the same holds good. Emily Laxton and Marchioness of Exeter, and Mrs. Laxton (1878), raised by Mr. Lixton, sent out by us; Mr. Postan's May Quennell, sent out by Messrs. William Paul & Son; and Mr. Davis's Penelope Mayo, sent out by Mr. Turner, are, with our own John Bright and Robert Maroon, the best of the year. Of the French kinds of 1877-78, taking first the Hybrid Perpetuals, we hold that Alfred K. Williams, a new Horace Vernet-like flower, Garcon's Boidieu, sent out by Mar-

gottin, a large, bold flower, and Edouard Dufour, of Lévêque, are the best amongst the crimson. Madame Jean Bowyer is in the way of Marie Finger, and is promising; Liabaud's two, Madame Gabriel Luizet and Madame Laboulaye, an improved Duclès of Edinburgh, are promising lights. Mr. Guillot's Hybrid Tea Mlle. Alexandre Bernaix, and Lévêque's Princess de Tremouille, are both free-blooming and La France-like Roses. Of the Teas, we think highly from flowers seen here, of Mr. Bennett's Madame Welch, a seedling of Madame Ducher, at Lyons; and Lacharme's Madame Lambard is a good vigorous free-flowering Tea, of soft rosy-peach colour, likely to be particularly useful. A new raiser, Nabouand, sent out some ten or twelve new Teas, some of which, as Princess Vera, look pretty; but to be useful now, a Tea Rose must have a bold vigorous habit and large perfect flowers, or we might as well revive some of the old varieties, like Caroline and Tea Jaune, which have been thrown out of the catalogues. It is pleasant to find that Roses continue to progress, and pleasanter to find English-raised kinds heading the lists.—"Florist."

NEW VARIEGATED TEA ROSE AMERICAN BANNER.

The most striking novelty with which we have met in our long experience with plants, is represented in the accompanying engraving. For the first time, so far as we can ascertain, we have obtained a Tea Rose distinctly striped with crimson and white, and at the same time retaining all the valuable qualities of its class, viz., delicacy of colour and texture, exquisite fragrance, and continuous bloom. We have long had striped varieties of the hardy garden Roses, such as "York and Lancaster," etc., but these flower only once, and having but



New Variegated Tea Rose American Banner.

little merit are not generally grown. This new variety originated in 1877 with Mr. George Cartwright of Dedham, Mass., who states that it appeared as a "sport" upon the well known crimson Tea Rose, "Bon Silens." The leaf, from the axil of which the sporting shoot started, showed in one-half the leathery foliage of the "sport" while the other half had the foliage peculiar to "Bon Silens." We have frequently, in other plants, similar variations in the colour of flowers; for example, it is quite common to find one shoot of *Hibiscus Rosa-sinensis* bearing orange coloured, and another having crimson flowers but the foliage in such cases remains unchanged. Again, we have Carnations bearing at one time on the same plant, both plain scarlet flowers and those striped with scarlet and white. So with Dahlias, Verbenas, Petunias, and scores of other plants; but in all of these the flowers only vary, the foliage does not. In the case of this new striped Rose, the distinct change in foliage is to me more marvellous than even that in the flower. We have named this Rose "American Banner" as the colours are very nearly those of the stripes of our national flag. When a name can be to some extent descriptive it is always, we think, of advantage.—PETER HENDERSON, in "American Agriculturist."

the centre. The side beds are planted with Teas, consisting of the following kinds:—Lamarque, Devonienais, Safrano, Goubault, Niphetos, President, Maréchal Niel, and Gloire de Dijon. The plants are remarkably strong, and yearly produce immense crops of flowers. As a rule, Tea Roses receive little pruning, but here they are pruned in the same way as Hybrid Perpetuals, by which means they are kept within bounds, and larger crops of flowers are produced than would otherwise be obtained. The centre bed is filled with Cocoa-nut fibre, in which the pot Roses, brought on elsewhere are plunged, and from which the earliest blooms are obtained. A house like this can be put up at comparatively little expense, and, whether the blooms were required for cutting or not, it would always be a source of interest.—S.

THE FLOWER GARDEN.

PROPAGATION AND GROWTH OF LILIES.

I HAVE watched the controversy that has been going on between "Dunedin" and others respecting Lilies, and, as a propagator and at one time a grower of thousands of Lilies of various kinds, my experience teaches me that none of the writers in question have yet reached the root of the subject. Although I agree in the main with "Dunedin," yet I must say that some of his statements are unsatisfactory. I have no hesitation in asserting that Lily bulbs are reproduced in their entirety annually. Commencing with their propagation from scales, or parts of the old bulb, every scale, if removed with a sharp knife so as to have a small portion of the base adhering to it, will produce the first year a bulb about the size of a Pea on the side of the small portion of base left, and in some cases two or three bulbs. By allowing these to remain in the seed-pan, if not inserted too thickly at first, they form a larger bulb on the side of the small one. They are then shaken out and some five or six put in a 6-in. pot, when some of them would bloom, but I never allow them in their third season to do that. In the autumn they are fair-sized bulbs, when they may be planted singly, or, if of the lancifolius section, four or five may be put in an 8-in. or 9-in. pot; *L. auratum* takes a year longer to arrive at this size. Now, by attentively studying their growth during these four seasons many things may be learned; for instance, I never find Lilies perfectly at rest, and no sooner has the stem of the old bulb (which has, so far, supported the new one attached to its base) begun to show signs of decay and ceased its support, than the new bulb begins to throw out roots to support itself; therefore, I always repot as soon as ever the stem turns hard at the base and shows symptoms of ripening. Any one examining a bulb of *L. auratum* will find the base of the stem of the old bulb by the side of the new one, and easily detached from it, proving that like *Gladioli*, an entirely new bulb is formed, and, moreover, if the stem be rendered unhealthy by neglect the young bulb will be poor in consequence. I always judge bulbs by their size and healthy appearance, and I never knew a single instance in which a small bulb had a larger number or better blooms than a large one. If any bulbs produce weak stems I find that removing their flowers throws the whole energy of the plant into the stem, and, as a consequence, far finer bulbs are the result; this I discovered accidentally in 1865. Mr. Ray, the late curator of the Dean Cemetery in Edinburgh, had a very fine bulb of *L. auratum* which produced seven flowers—then thought something wonderful—and, according to the usual practice, he placed it, when done blooming, under a stage, and allowed it to stay there until next March, when he determined to repot it. On examining it he was surprised to find the pot full of new roots; he gave it a good shift, without disturbing it more than he could help, but May came before there were any signs of a stem, and when one was formed it was only half as strong as that produced the previous year, and the top was deformed. This ultimately got broken off, when the stem began to thicken enormously, so that by autumn it was more like the stump of a Hollyhock than a stalk of *Lilium auratum*; besides, it formed a number of young bulbets at its base and at the axils of the leaves, all indicating its great strength. It was allowed to remain undisturbed that winter, and next spring it threw up a magnificent shoot 5 ft. high, and produced thirty-five perfect blooms on that one stem. This, which was thought something extraordinary, was noticed in all the Edinburgh newspapers and visited by the late Mr. McNab and, I may safely say, by hundreds of others. It really was magnificent, and even now, when I have seen hundreds of fine examples of *L. auratum*, I never saw one which I admired more than I did that one, or one more perfectly formed. It did well without repotting for two more years, and then it broke into three stems, producing amongst them forty blooms. I left the neighbourhood, and know no more of its history, but it taught me to avoid late potting and to shift only when really

A Useful Rose House.—One of the best Rose houses which we have seen for a long time is that in the garden at The Poles, Ware. It is span-roofed, with a raised bed all round it, and one in

necessary. It taught me, moreover, that a year's rest from blooming gives strength and does no harm, and, finally, that bulblets on the stem show signs of vigour, and must be considered to be a natural method of increasing the plant.

EDINA.

STEM ROOTS OF LILIES.

It was fortunate indeed for "Dunedin" that he was able for the moment to shelter himself behind the remarks of "E. H. W.," but all that that writer says does not help him much. It is of little importance how many stem roots Lilies are said to have when growing naturally on the hills of Japan. What most concerns us is how they behave here under a thoroughly rational and successional course of treatment. We know that perfectly sound bulbs, grown on from year to year, that are never allowed to suffer from want of root room, loss of sap, or vital power, produce stem roots in abundance. In such cases they are most assuredly not "the result of error on the part of the cultivator." I once saw at South Kensington one of the first imported bulbs of *L. auratum* that had been simply potted on as it required more room. Speaking from memory, it had, I think, some eight or ten stems, was from 9 ft. to 11 ft. high, and had an aggregate of 147 flowers on it. I am pretty certain that no stem roots had ever been removed from that plant, though it had plenty, for the whole top soil was filled with them. Why, even when planted out, and where the soil and situation are most favourable, stem roots are produced in abundance; in fact, under every variety of circumstance, *Lilium auratum* can no more help producing stem roots than it can grow without food. The experienced cultivator notices every peculiarity and habit of his plants, and supplies their wants accordingly, and when he sees that such attentions lead to increased size and vigour, I repeat that it will require more than theory to convince him that his practice is wrong. The matter now stands thus: "Dunedin" states that the stem roots of Lilies—taking *L. auratum* as an example—are injurious, unnatural, and ought to be discouraged, in fact, amputated, and the only proof which he brings to support his statement is to repeat "E. H. W.'s" assertion that this same Lily many thousands of miles away, behaves differently from what it does with us. Stem roots, in my opinion, are not injurious to Lilies; on the contrary they are perfectly natural, and ought to be cared for and encouraged. In proof of this let me point to the numerous successful instances of cultivation to be met with all over the country, where stem roots are always present and always encouraged, and where the annually increasing size and improved appearance of the plants prove to demonstration that these same stem roots must be beneficial.

Newry.

T. SMITH.

SCALES OF IMPORTED LILY BULBS.

"F. W. B." says (p. 560, Vol. XIV.), "'Dunedin' asserts that the scales of imported bulbs of *L. auratum* are dead when received in this country from Japan, and that the cell walls which make up the tissue or fabric of the bulb remain unaltered, and perform some offices long after life has departed. This, I am sure," he continues, "will be a surprising statement to many, more especially to those who have successfully used the scales of such old bulbs for propagating purposes. The fact is," he adds, "that the old scales of Lily bulbs which have flowered are not dead." I grant that those who believe in the perennial theory may be surprised. But those who believe in the successional bulb system, and who thoroughly understand the nature of the bulb and its scales, will not be surprised at what I have said. The fact is, the dead scales, in consequence of the persistent nature of the cell walls, are simply the husks, or external protectors of the embryo, and perform this office long after life has departed from them. If we cut open an imported bulb-scale, moisture may be perceived, but that is not nourishing matter. There is, however, nourishing matter deposited at the base of the scales, and in which the embryo is embedded. The cultivator, therefore, who desires to use these scales for propagating purposes, picks them off the core of the bulb, and plants them in a pan filled with soil properly prepared for the purpose. He then places them in a house, where they can have the benefit of heat and moisture, the result of which is, the embryos, nourished and strengthened at the expense of the stored-up matter around them (not of the scales), spring into life, and press through the integuments which cover them; the young roots protrude downwards and the stems rise upwards, throwing over the original scales, which—their office of protectors to the embryos being now accomplished—have nothing more left for them to do but to dwindle away and disappear. Mr. Baines (p. 561, Dec. 21) questions the correctness of my statement, when I said that the cells in Lily bulbs are so infinitesimally minute, that in a fresh, healthy, medium-sized *L. auratum* bulb, it has been calculated that there are

not less than 300 millions of them. At first sight this number may certainly appear to be somewhat apocryphal, but it is nevertheless correct. With regard to the value of large bulbs compared with smaller ones, Mr. Baines differs from me entirely, but in doing so I think he overlooks very important facts. In the first place, if we take a newly imported *L. auratum* bulb and cut it in two from the apex to the base, we shall have disclosed to our view, portions of three distinct bulbs; that is, part of the old dead bulb which bloomed last season—the new bulb which has been inclosed within the old bulb, and which was destined to bloom next season—and the seed-bud distinctly observable in good bulbs by the naked eye, and which was destined to grow up and bloom the season after the next. This representation of what may be called "three in one," is what is termed the successional bulb system, so entirely ignored by Mr. T. Smith, of Newry, but which has been proved over and over again, within the last two years, to be correct. Further—if we take half-a-dozen large bulbs and cut them open in the same manner, we should find that the new bulbs, within the old ones, varied very much in size. Had these bulbs been planted, some of them might have bloomed extra well; but others would have canced, very possibly, much disappointment to the buyer, notwithstanding that bulb importers persist in telling us, that what they offer for sale are all sound, flowering Lilies, and such as will produce a flower spike with from eight to ten blooms. Of this, as a fact, whatever they may venture to say, they can know absolutely nothing, nor can any one else. The cause of the difference in apparently similar bulbs it may be desirable to have explained. In order to do so, we must suppose that we have gone back to the previous season. During a period of five or six months previous to the appearance of the flower buds on the parent plants, the new bulbs within the old ones (not being very large at the beginning of this period), undergo, according to experimental facts, a complete transformation in regard to size. The nourishment, or elaborated sap, as it accumulates in the bulb, causes the scales of the new bulbs to enlarge in a lesser or greater degree, so that before the parent bulbs begin to bloom, the new bulbs may have enlarged, some very slightly, but others one-fourth, one-half, and sometimes nearly double what they were at the beginning of the five or six months. Therefore, in purchasing large bulbs, as patronised by Mr. Baines, they may possibly produce the smallest sizes; for no one can tell beforehand what the new bulbs may turn out to be. Again, suppose we plant fifty or 100 of these imported bulbs, three or four out of every five may come up the first season and bloom fairly well. But then we ask, what is the reason they do not all come up and bloom equally well? This is just the question which many so-called Lily growers cannot answer. The young stems that have not come up have been so far destroyed by the larvae of Japanese insects that, before they were planted here, all connection between them and the nourishment accumulated in the bulb has been cut off. Hence, those stems, though a few of them may have appeared above the ground, have decayed and died. As a proof of this, I may mention that I have dissected many imported bulbs, and have found colonies of little, voracious, thread-like worms, about $\frac{1}{16}$ in. in length, feeding on the base of the young stems; so that, subject to such attacks, it would be impossible that these tender stems could live and thrive. I have even watched their depredations, for I have put small, fresh pieces of the stems into wine-glasses, with seven or eight of these worms into each glass, and have found that they each consumed more in a day than was equal to the bulk of their own bodies. As regards the time when they took possession of the bulbs, there cannot be a doubt that the ten to fifteen days they were exposed to the atmosphere before packing for exportation. I have said that three or four out of every five may come up, but, as that does not account for so great a general loss, I may further state that I have also seen, in very many cases, that, instead of feeding on the base of the young stems, these worms have consumed the young seed-buds themselves. The result of this is simply the loss of the successional bulbs which were destined to bloom the season after the next, and, consequently, the entire loss of the plants; for nothing else, in my opinion, can account for the wholesale destruction, which is a common complaint, in consequence of the non-appearance of imported Lilies during the second season.

DUNEDIN.

[Here, we think, this discussion had better rest for the present.]

Hardiness of *Stobæa purpurea*.—Having sown the first seeds of this plant, sent by Mr. Macowan to Mr. Wilson Saunders, permit me to say a few words respecting its hardiness. The young plants when up were first potted off singly and afterwards some were planted in the open garden. The latter flowered in 1871, and withstood the following winter without the least injury. I have also had this

Stobaea in different exposed situations along with ordinary hardy herbaceous plants up to the present time, and it flowered each successive season without that "little extra attention" mentioned by Mr. Hemsley. I have also grown it from English-ripened seeds, and likewise from divisions, and have proved it to be perfectly hardy. It is a good plant for mixed herbaceous borders. Thistle-like plants I am aware are not general favourites, but this I hold to be worthy of a place in any collection of hardy plants.—C. GREEN, *Pendel Court, Bletchingly.*

A SUBSTITUTE FOR NETTLES.

I HAVE lately seen several notes in THE GARDEN about Nettles. Whether they are indigenous or not they flourish so luxuriantly in the woods here, away from all cultivation that we have sometimes made walking sticks out of them. Nettles were certainly well known to the ancient Greeks and Romans. Pliny, who was well up in all the plant-lore of ancient Italy, and gives a long account of their medicinal qualities, says nothing of their introduction from Asia. He begins his description by saying: "What can be more odious than the Nettle," and as many will agree with him, I advise them to try to supersede Nettles in their grounds, as I am doing, by substituting for them *Polygonum Sieboldi*. I think this is the right name, as I have compared the different species which are named at Kew, but I first got it several years ago from Standish, of Ascot, under the name of *P. japonicum*. It is quite naturalised in my woods, rejoicing in the cool, damp, open soil in which Nettles generally grow. It does not spread fast in the middle of Nettles, though it quite holds its own, and gradually beats them. It grows 7 ft. or 8 ft. high, bearing in August and September elegant tufts of white flowers not unlike those of *Spirea japonica*. It dies to the root with the first hard frost. Those who wish to try it should buy or otherwise obtain a plant, divide it according to its joints or knees, which, as its name denotes, are many, and plant them in a spare spot of moist, strong soil. When it has once been established, they may clear it out every autumn and plant it in their Nettle beds, as I do, but they will find it so persistent that when they think they have made a clearance, it will come up again the next summer as strong as ever. There is one covert in Windsor Park, near the Obelisk, in which I have seen it naturalised.

C. W. D.D.

Edge Hall, M.L.Pas.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Planting out Soft-wooded Heaths in Summer.—In Alsace and in some parts of Germany soft-wooded Heaths of the *hyemalis* and *gracilis* types are planted out in the open air during the summer months. Beds of fibrous peat are made up for them, and they apparently thrive much better thus treated than when they are kept in pots, as they can be watered more freely, a great advantage where the summer sun is so fierce as it is there. When grown in pots they are liable to die suddenly, much in the same way as some of our choice kinds of New Holland plants do. Healthy plants to-day are not unfrequently total wrecks to-morrow. When planted out they do not appear to suffer in this way to the same extent, a circumstance which may be attributed to the free drainage to which they are subjected and consequent absence of stagnant moisture round the collar. When taken up and potted in autumn they do not appear to sustain any check, but flower as well as those grown wholly in pots. There is no reason why they should not be so treated in this country, extra insurance being insured with a corresponding diminution of labour. Although this question of planting out mainly concerns the soft-wooded section, it is not certain that the hard-wooded kinds would not also be benefited thereby. One of the oldest and most successful Heath growers in this country informed me that he once planted out a selection of the choicest kinds, and they "grew like Willows." Plants intended for specimens would probably be benefited by being planted out for a season, thereby endowing them with extra vigour.—J. CORNELL, *Byfleet.*

Winter-flowering Wall Plants.—The severe weather which we have had has brought the list of outdoor flowers down to a minimum, as even the common pink China Rose, that for many winters has been procurable in quantity on sheltered walls at Christmas has this year been entirely flowerless for these two months past. The only plants that maintain their usual character for flowering in mid-winter are *Chimonanthus fragrans* and *Jasminum nudiflorum* both on south walls; the latter, as persistently as the frost destroys one set of flowers expands a few more of its bright yellow blossoms, while the *Chimonanthus* appears to defy the weather, and is now well furnished with both expanded and expanding flowers, by no means

showy, but the dearth of outdoor blossoms makes them doubly welcome when even the hardy Aconite and Snowdrop are at a standstill, and will probably be much later this year than usual.—J. GROOM, *Linton, Maidstone.*

Anemone-leaved Geranium.—This shrubby species is undoubtedly one of the handsomest of the genus, and, though not quite hardy with us, it deserves attention because it is one of the most useful of cool house or window plants. It is stated, however, that it is hardy in Devonshire. The stem sometimes attains a height of 3 ft. or 4 ft., and the plant in other respects seems to approach the true *Pelargonium*. It is a native of the Canary Islands.—J. S.

Clematises for Low Walls.—That these are well adapted for growing on low walls as well as high ones is clearly proved by a long wall which we saw so planted lately in a garden in Hertfordshire. The plants in this case are not kept trim and close, but are allowed to scramble along the ground at the base of the wall. Where, however, neatness is studied, the way to secure it is to cut down the plants to the ground in spring, and mulch with manure. When they break into growth stop the shoots beyond the first joint, and perform the same operation again and again until the wall is covered with flowering wood.—H.

Cambridge Botanic Garden, Mass.—In the directors' report upon the condition and progress of this garden just published, we find that the following interesting plants have flowered in it for the first time during the year. With a few exceptions, they have not flowered in cultivation before:—*Acidanthera bicolor*, Hochst.; *Antirrhinum speciosum*, Gray; *Aster Bigelovi*, Gray; *Aster Curtissi*, Torr. and Gray; *Aster salungosus*, Richardson; *Berberis Fendleri*, Gray; *Eremurus robustus*, Regel; *Eucridium Brewerii*, Gray; *Pedia Nuttallii*, Torr. and Gray; *Gutierrezia Euthamiae*, Torr. and Gray; *Gymnolomia Porteri*, Gray; *Hesperaloe yuccifolia*, Engelm.; *Iris Hartwegii*, Baker; *Lobelia Feayana*, Gray; *Palmerella debilis*, Gray; *Pancratium*, n. sp. Florida; *Pharysaria Newberryi*, Gray; *Polymonium carneum*, Gray; *Senecio Elliottii*, Torr. and Gray; *Senecio Millefolium*, Torr. and Gray; *Spiraea coccinea*, Nutt; *Townsendia sericea*, Hook; *Xanthosoma sagittifolium*, Schott; and *Zygadenus Fremonti*, Torr.

Permanent Beds of Cannas.—For the last six years I have left my Cannas out in the beds all the year round, and I find the plan so advantageous that I should never think of going back to the old system of lifting the roots in autumn. The growth is much stronger and the flowers larger and more numerous; but our beds are well drained and the surface elevated above the natural level, and there is 3 ft. in depth of good soil. When the frost in autumn kills the foliage, the stems are cut down, and the beds are covered 1 ft. deep with dry litter, which remains on till the end of April or beginning of May, or till the weather is settled, and by that time the few young stems are pushing through the soil; but I find it necessary to replant occasionally, not because the soil is exhausted, as that could be met by rich top-dressings, but because the growth becomes dense and crowded after standing two or three years in one position. Perhaps if they were planted thinly at first, this necessity might not arise, but to insure a good mass the first season we plant thickly, and in after years, as they become too crowded, lift carefully, and replant. I have never found any inconvenience to arise from this; on the contrary, it gives an opportunity to stir up the beds, and, at the same time, increases the stock of plants. This work is always done immediately after the covering is removed in spring, just as the plants are bursting into growth, and they seem to experience little or no check from it at that season, but start off as vigorously as ever. Of course, the work must be carefully done and the roots not needlessly mutilated.—E. HOBDAV.

Hardiness of *Streptocarpus floribundus*.—This charming plant has proved itself to be so far hardy as to have been well frozen in a pan in a cold house and to have only lost its old leaves, whilst the crowns and young leaves remain safe. This is proof conclusive that it will do well in any cool house, perhaps frame, and will thrive well in sheltered spots on rockwork in the open air. I have, during the past season found it to seed freely. The pods have a peculiar appearance, being erect, long, spiral, and pointed, bearing no inconsiderable resemblance to a small pod of the once famous *Raphanus caudatus*. They are long in ripening, but eventually produce fertile seed. A batch of seedlings sown in the autumn has withstood the cold so far, although they are so minute as to be almost indistinguishable. A gentle warmth would have kept them growing, and in the summer these would have bloomed freely. No doubt when the spring advances these small plants will grow rapidly. It is interesting to know that this plant can be thus freely propagated from seed.—A. D.

GARDEN DESTROYERS.

THE SMALL ERMINE MOTH.

(YPONOMEUTA PADELLA.)

THE caterpillars of this beautiful little moth are unfortunately very destructive to the foliage of any trees or shrubs which they may attack, and, when a fruit tree is infested by them; the crop of fruit on it for that year is sure to be spoiled. Their favourite food is the leaves of the Bird Cherry (*Prunus Padas*), from which plant the name of the insect is derived. In the absence of this shrub, which is not very common, the moth selects Apple, Pear, Plum, or almost any fruit tree, Black Thorn, White Thorn, or *Euonymus*, on which to deposit her eggs. It is curious that in some places only one kind of tree is attacked; if the White Thorn suffers the Apples escape, and *vice versa*. Sometimes only one kind of



Yponomeuta padella.

Apple is attacked, the others remaining untouched, even though quite close to the infested trees. At times White Thorn hedges are entirely stripped of their leaves and covered with silky webs by these caterpillars. Apple trees frequently fare little better, and have the appearance, when badly attacked, of their leaves having been burnt. The young shoots and leaves, when examined, will be found to be surrounded by strong, brownish, silken webs; their growth is not only impeded by these webs, but the caterpillars within them devour the shoots and leaves. Various methods have been suggested and tried for the destruction of this pest. One of the best is to destroy, when possible, the moths before they have laid their eggs; this is more practicable than it often is with other insects, as they are easily seen on account of their conspicuous colouring, and as they generally all make their appearance at the same time. As soon as any are seen sheets

should be laid under the trees during the daytime and the branches shaken or beaten sharply, when the moths, which are very inactive during the day, will fall off and may be easily killed. The webs should be gathered and the caterpillars killed; care should be taken during the operation, as the caterpillars are very likely to fall to the ground when disturbed. If the webs are high up in the trees they may be collected by the help of a few thorny twigs tied to the end of a stick. Soap suds applied by a garden engine, with sufficient force to break the webs and reach the caterpillars, has also been recommended. As the *Chrysalides* are found in the webs, the insects may easily be destroyed when in that state. In France the damage caused by this insect to Apple trees is very great occasionally. Professor Westwood states that he has noticed the Apple trees planted near the road between Abbeville and Paris, for miles entirely defoliated by these caterpillars. The branches were covered with webs, and not the least portion of green was to be seen, the webs from the branches reaching down in festoons to the ground, which, beneath the trees, appeared carpeted with silk. The moths make their appearance in June or July, and deposit their eggs, twenty or thirty in number, in a mass near a blossom or leaf-bud; these they coat over with a gummy substance, which forms a kind of scale over them when it dries. The caterpillars are hatched in the autumn, but remain under the shelter of the scale during the winter. When the trees are coming into leaf they leave their winter quarters, but as they still require a certain amount of shelter from the weather, they eat their way into the leaves, and live for a short time between the cuticles, feeding on the tissues, until they are sufficiently strong to bear the changes of the weather; they then make their appearance on the surface of the leaves, sometimes much to the astonishment of gardeners, who have probably attributed to the east wind, or blight, the brown colour of the Apple leaves, and are much surprised some morning to find the trees covered with well-grown caterpillars, when not one was to be seen the previous day. Having left the interior of the leaves, they collect together and spin threads until they form a thick web round a young shoot, enclosing several leaves, within which they live, feeding on the upper part of the leaves until they are finished, when they move to another shoot and form a new web. The larger ones sometimes cover several small branches and shoots; in this way each family makes several webs, which, filled with half-eaten, withered leaves, make the trees look as if they had been singed. The caterpillars are generally fully grown about the middle of June. They then collect at one end of the web, and, arranging themselves close together, each encloses itself in a leathery cocoon of white silk, and assumes the *chrysalis* state, they usually finish their cocoons on the same day. It is a curious fact in connection with these insects that they are not only gregarious when in the caterpillar state, but also when they become *chrysalides*. In about fifteen or twenty days, the perfect insects appear. The moths measure nearly 1 in. across the expanded wings, which are long and narrow. The colour of the upper pair is very variable, but they are usually of a leaden white colour, with about thirty small black spots arranged in rather irregular longitudinal lines near the margins of the wings, which are deeply fringed with vivid-coloured hairs. The ground colour of the wings is sometimes pure white, or white, with a leaden or yellowish cloud in the middle, or pale or deep lead colour with every intermediate shade; the number of the spots also varies. The lower wings are leaden coloured, with a paler fringe; head, antennæ, body and legs, white. The caterpillar measures about $\frac{1}{2}$ in. in length, and is of a greyish-white or dirty yellow colour, with a brownish head; the body is sprinkled with a number of small black spots, and has one larger spot on each side of every joint. They are furnished with eight pairs of legs, the first three, the sixth, seventh, eighth, ninth, and last joints each bearing a pair. The *chrysalides* are of a yellowish-brown colour. S. G. S.

The Well Walk at Hampstead.—Efforts are being made to preserve the fine Lime trees of the Well Walk, Hampstead, which it was intended to cut down to make way for building operations.

NOTES FROM KEW.

Orchids.—Dendrobies in flower, in addition to those previously mentioned, include the pretty *D. moniliforme*, which strikingly resembles the better known *D. nobile* in habit of growth, but is very distinct in blossom, being rather smaller, with narrow segments of a pale rose colour, tipped with a darker shade, and a pointed lip of a rich magenta colour. It is a native of China and Japan, therefore it is well adapted for cool house culture. It is known also in collections under the name *D. Linawianum*. *D. primalunum* is another fine East Indian kind, which produces a plentiful supply of blossoms on the naked stems; they have a large shallow lip of a light primrose colour, and pinkish outer segments, making the plant an admirable object for suspended baskets. A singular little kind is the Australian *D. emulium*, which is similar in flower to *D. tetragonum*, but smaller, with narrow, pointed, cream-coloured segments, and a tiny purple, blotched lip; the blossoms are borne in clusters on the end of short, truncated stems. It is, however, worthless for general culture. There are few more useful Orchids than the old *Cymbidium sinense*, as it is easy to manage and very free-flowering, and though not showy, exhales a delightful fragrance, resembling that of Violets. The flowers are borne on erect spikes about 2 ft. high, and are of a brownish colour, streaked with dark lines. A very singular little Orchid is *Restrepia antennifera*, which is found on the new Granadine Andes, growing on trees at an altitude varying from 6,000 ft. to 10,000 ft. It bears numerous oval, fleshy leaves on short stalks and slender flower stems, terminated by blossoms of curious shape, as the thread-like upper divisions are club-shaped, much resembling the antennæ of a butterfly, and of a bright violet-purple colour, the two lower united and boat-shaped, enclosing the small lip, the whole being copiously spotted with purple. This very interesting plant is well deserving a place in every collection. The most noteworthy of the *Odontoglossums* are *O. luteo-purpureum*, a very handsome kind from New Granada, with spikes 2 ft. to 3 ft. long, branched at the base, and bearing numerous flowers $\frac{1}{2}$ in. to 3 in. across, with a large, yellowish, fringed lip, surmounted by a golden crest, and the outer divisions alternately barred with chocolate and yellow. *O. gloriosum* is another free-growing and profuse-flowering kind; the spikes and flowers are smaller than those of the preceding, the colour of the latter being pale yellow, with brown or purplish spots. The old *O. biconiense* is represented by some fine examples producing many spikes of rosy-lipped flowers, which, with several plants of the lovely *O. Pescatorei*, have for a long time aided in enlivening the cool compartment. *Ocidium cheiroporum*, a native of the Volcano of Chiriqui, and a somewhat rare kind, deserves a passing notice on account of its singularly-shaped blossoms, which are of a dullish-yellow and a waxy texture; also *O. sphegiferum*, a Brazilian species with a prettily-spotted, fiddle-shaped lip and chocolate and yellow-banded sepals. *Stenorrhynchus speciosus* is a very showy and interesting terrestrial Orchid, an old introduction from Tropical America. It has rather large, deep green, oval leaves, and produces spikes about 1 ft. high, terminated by a dense raceme of deep flesh-coloured blossoms, each accompanied by a membranaceous pale flesh-coloured flower-leaf. It lasts a long time in good condition, and is a plant of sterling merit. The lovely *Masdevallia amabilis* is one of the best of the solitary flowered section of the genus. The variety at Kew bears flowers of a rich violet-purple, with faint dashes of a lighter hue, the whole flower changing later on to a light violet colour. Its native habitat is at high elevations in Peru and Columbia. *Saccolabium Harrisonianum* is finely in flower with its dense, pendulous racemes of pure white, waxy blossoms, and yields an agreeable aromatic perfume. A plant of such chaste beauty as this needs no pen to recommend its culture. One of the best cool-house Orchids is *Ada aurantiaca*, which, by the way, is named here *Mesopidmium*, the flowers being of a deep orange colour a colour rarely seen amongst Orchids, and it is, moreover, a very free grower and flowers profusely. Near to it is the rose-coloured *Mesopidmium sanguineum*, equally desirable and well suited for basket culture, as the loose racemes have a pendulous habit. *Epidendrum xanthinum*, with yellow flowers, *E. ibaguense* and elongatum with pink blooms, are remarkable for the length of time they continue to bear a succession of bloom, which is produced in clusters at the apex of the slender leafy stems 4 ft. 6 in. long. Maule's variety of the old favourite *Cypripedium insigne* is decidedly superior to the type as the colour altogether is brighter and the erect sepal is half white with a few purple spots, of which the type is destitute. *C. venustum*, var. *spectabile*, shows another instance of variation in the colour of the blossoms, as the side sepals are of a rosy shade and the colouring of the rest of the flower more distinct.—W.

A Good Table Plant.—One of the best plants we have for single vase or table decoration is *Pandanus Veitchii*. It has fine arching foliage that is beautifully variegated; it makes a good plant

in a small pot, and submits to the rather rough usage to which decorative plants now-a-days are subjected better than most plants. —J. GROOM.

NOTES OF THE WEEK

Epiphyllums on Stumps of Tree Ferns.—An excellent idea is being carried out in Messrs. Veitch's nursery at Chelsea, viz., that of planting *Epiphyllums* on dead stumps of *Lomaria* and other miniature Tree Ferns. A cavity to hold soil may easily be hollowed out the top of the stem with a knife, and either rooted plants or cuttings of *Epiphyllums* grow readily on it, bushy-headed, finely-flowered standards being thus obtained in a short time. If desirable, the naked stems might be clothed with Club Mosses or the small-growing *Ficus minima*.

Double Chinese Primulas.—These make a good display in the Pine-apple Nursery just now. The flowers, which are of good form and embrace many shades of colour, last much longer than those of single varieties, and are more useful for cutting. There is also a good display of semi-double-flowered kinds with finely fringed edges which come true from seed.

Goldfussia isophylla.—Though not one of the most showy of plants, this is well worth growing on account of its flowering in winter. It is a plant of easy culture, and one which grows into shapely specimens without either tying or staking. It is grown well at The Poles, Ware, bushy plants in 6-in. or 8-in. pots being literally covered with pale blue flowers, which associate effectively with dwarf *Poinsettias*, *Primulas*, and similar plants. Under good culture plants of it continue to grow and flower abundantly for several months in succession. Cuttings of it strike readily, and may soon be grown into neat specimens. Old plants should be cut back after flowering.

Variegated Euonymuses.—All variegated kinds of *Euonymus* have suffered severely during the past severe weather, especially the broad-leaved silver kind, which, in many cases, is injured beyond recovery. Of this some nurserymen have lost nearly their whole stock. This is a matter to be regretted, inasmuch as the demand for variegated *Euonymuses* has been very great during the past few years on account of their suitability for windows, covering walls, and for growing in the form of bushes or standards in London gardens or by the seaside. As market plants, too, they are much prized and realise good prices.

Primulas at Chiswick.—A fine collection of Chinese *Primulas* may now be seen in flower at Chiswick. It consists of plants raised in spring from seed obtained from every available source, and the varied forms and colours of both foliage and flowers render them attractive and interesting. The old double white is unusually well grown, and at the present time a mass of blossom. It might, with advantage, be more largely grown in gardens than it is, for few plants continue in bloom longer, or yield a better supply of useful flowers for cutting in winter. Light sandy loam is the best soil in which to grow these *Primulas*; they should have a temperature of from 50° to 55°, plenty of air, and due attention to watering. A little weak manure water when the plants show flower is also beneficial.

Salix cœrulea.—This Willow is now densely covered with its silvery catkins, and very beautiful it is in that condition. In ordinary seasons the catkins show themselves usually a little earlier, but I was not prepared for so fine a display of them during this severe frost as may now be seen in my Willow grounds. One tree of this Willow, standing on the bank of a small stream, is eight years of age, and its size is as follows: Diameter or spread of semi-pendulous branches, 25 ft.; height, 22 ft.; girth of bole at 2 ft. high, 26 in. It will be seen, therefore, that it is not only a very beautiful, but a very rapid-growing tree, and it has the further merit of belonging to that class of Willow that contains the largest proportion of the medicine called salicine. It is this property of the Willow that makes it of value as an anti-fever tree.—W. SCALING, Basford, Notts.

Pomegranates on Walls.—Two very fine specimens of *Pomegranate* may be seen growing on the front of Mr. Hanbury's house, at The Poles, Ware. They are not closely pruned in and kept trim, as is generally the case with *Pomegranates*, system which divests them of the greater part of their flowering wood; on the contrary, only such straggling shoots as it is absolutely necessary to remove are interfered with. Thus treated they produce yearly abundance of flowers, bushfuls of which are now and then out for indoor decoration. At the present time they are furnished with multitudes of young, wiry, well-ripened shoots, which will evidently produce a

blaze of bloom in the autumn. These trees have no protection afforded them whatever, and they suffer no injury even in the severest winters, a fact which clearly proves that on sunny walls, in the milder parts of England at least, the Pomegranate may be made to form one of the most effective of wall plants. In the south of England Pomegranates frequently bear large crops of fruit, but in less favourable situations they blossom too late for the fruit to set and come to maturity. In this country they are only valued for their wealth of brilliant blossoms, which are unsurpassed for effect or for use in floral decoration. On the walls of Falmouth Palace the Pomegranate grows and flowers abundantly, and it may also be seen on sunny walls at Kew. In some of the London parks during summer the Pomegranate grows in pots, and plunged here and there in the green turf, has, when laden with bright coral buds and flowers, a fine effect, and there is no reason why neat bushy plants of it in pots should not be grown for conservatory or room decoration, and, when associated with Ferns and similar plants, they would be much more satisfactory than many other plants grown for such purposes.

Sale of Messrs. Rolleston's Plants.—These are being sold by Messrs. Protheroe & Morris. Last week's sale extended over five days, and comprised extensive collections of Orchids, stove and greenhouse plants, New Holland plants, Tree Ferns, &c. The plants were more remarkable for variety than for specially fine specimens, but the few there were realised good prices. Amongst the more interesting may be mentioned—*Dendrochilum filiforme*, 15 gs.; *Odontoglossum vexillarium*, 10 gs.; *Cologyne cristata*, 11½ gs.; *Aerides Schröderi*, £7; *A. affine superbum*, £7; and *Anthurium Scherzerianum*, £11. We understand that the collections are not yet exhausted, and that other sales are to follow, particulars of which will be found in our advertising columns.

Leeds Gardeners' Benefit Society.—The twelfth annual report of this Society has just reached us, and it is satisfactory to find that it is steadily improving, both as regards members and funds. The object which the Society has in view is to make provision for members when sick and unable to follow their employment. The rates of contributions are 3d. per week, and 1s. each at the death of a member, and 6d. each at the death of a member's wife. Benefits to members, 10s. per week during the first twenty-six weeks, and 5s. per week during the remainder of such illness. At the death of a member £10, and at the death of a member's wife £7 is paid. The charge of initiation ranges from 5s. to £2 10s. according to age. At the Society's meetings, which take place the first Tuesday in every month, matters relating to horticulture are discussed, and occasional essays read thereat, thereby diffusing much useful information.

Orchids at Chelsea.—Even during this unfavourable season the Orchid houses in Messrs. Veitch's nursery are gay with choice and showy flowers. Among them is especially noticeable the chocolate-flowered *Oncidium Forbesi*, which has been in bloom for several months; its branching spikes floating gracefully over plants of the showy *Odontoglossum leopardiannum* and *Lycaste Skinneri*, the latter flowering freely even in 4-in. pots. A fine specimen of *Angreum sesquipedale* bears a dozen snow-white blossoms and buds, and the brilliant *Sophronitis grandiflora* makes a fine display on the upper portions of arch-shaped pieces of *Villia albida*, suspended from the roof. Small plants of the charming *Vanilla albida*, furnished with from four to six waxy-white, violet-tinted blossoms. To these may be added a fine variety of *Odontoglossum cirrhosum*, the showy *O. Halli*, and *Lonia aneops Dawsoni*, the flowers of which have pure white petals, violet-striped throat, and purple-tipped lip. *Lady's-slippers* are also very interesting on account of their great variety of form and colour.

Flora of Switzerland.—After the masterly works of Tschudi on "Animal Life in the Alps," and of Heer on the "History of Vegetation in Switzerland," another work likely to be of high value is announced—H. Christ on the plants of that country—"Das Pflanzenleben in der Schweiz." The interest of the work is all the greater that Switzerland contains on its narrow area nearly all the diversity of plants which grow in middle and northern Europe. Many years' research of the author in the field, his previous works on separate parts of the Alps, as well as his connection with the botanists of Europe, have enabled Dr. Christ to publish a work which may be expected to range with those above mentioned. It will appear in four fascicules, with many illustrations, and four maps of vegetable zones, one of which—the distribution of Grapes and of several plants of the Föhn and lake regions—will appear this month. The whole work will be finished about the spring of 1879, the first half fascicule having just appeared.—"Nature."

THE WEATHER AND THE BIRDS.

A WRITER in a provincial paper, alluding to the severe weather which has been experienced, says:—"Yet the extraordinary cold has not been without its compensating advantages. It has killed countless weeds, (?) the pest of the farmer, and has destroyed myriads of insects, which, after what are called open winters, commit such ravages on young and tender plants in spring. The frost has also a mellowing power on the soil, and especially upon that of clayey land," &c. As regards the last clause of this quotation, few will be, I think, inclined to differ from the opinion expressed by the writer, but I do not by any means feel so sure as to the destruction of countless numbers of weeds by the action of the frost. And, as regards the destruction of insects, I am inclined to think that they are so hardy as to be unlikely to be seriously injured by frost of even the greatest intensity, more particularly when in the ova or larvæ condition. I have even heard of tender-looking green caterpillars being frozen so hard that when dropped upon a dinner plate they sounded as if composed of glass, and yet when gradually thawed in a darkened chamber they became as lively as ever; so that the comparative immunity from injurious insects, which is sometimes experienced after severe winters, is not to be ascribed so much to the direct action of cold as to the enforced diligence on the part of insectivorous birds, which, during severe weather, when food is necessarily scarce, make every effort to obtain larvæ. Therefore, cultivators, if desirous to obtain the full benefit resulting from severe winters, should prevent, as far as possible, the indiscriminate slaughter of such birds, especially at a time when they are rendering the greatest possible service. On the approach of severe weather worms and grubs of all kinds instinctively make their way deeper into the soil, with, no doubt, the two-fold object of seeking protection from the cold, and from their natural enemies the birds. At the present time blackbirds, thrushes, and various other soft-billed birds, may be observed in thickets, under trees, hedgerows, and similar places, busily engaged in pulling about decaying leaves and other vegetable matter in their diligent search for grubs, snails, and insect of all kinds, few things, in fact, coming amiss to them, and it may well be supposed that by this wholesale destruction they are conferring upon cultivators benefits which will go far to compensate for much of the injury they are apt to inflict on fruit crops if left unprotected when approaching a ripe state. Some of our small birds, such as the blue titmouse, are sometimes blamed for picking the buds from fruit trees, &c., and of this I believe the blue titmouse to be perfectly innocent, although he may now be observed to be busily engaged upon the branches of fruit trees and gooseberry bushes, searching diligently for scale and other minute insects, on which account he is unfortunately suspected of aiding the bullfinch in his work of destruction. Three species of titmouse are to be seen in gardens and orchards, but the small blue variety is the most common, and an exceedingly industrious, sharp-eyed little fellow he is. I have known him in a very short time to clear a large Orange tree and other greenhouse plants from greenfly as effectively as could have been done by fumigation; but I believe no one has ever found the buds of fruit trees or Gooseberry bushes in his crop, and if he ever removes a bud it is only when such comes between him and his insect prey. On the other hand, it will be well, during the present weather, to keep a sharp out-look on plantations of Gooseberries and Currants, as well upon wall trees of all kinds, but more particularly to see that all is right with the Apricot, which, being generally in the most forward condition, is most likely to be attacked, and as the bullfinch does his work quietly, as well as quickly, one or two will, in the course of a few hours, destroy the prospects of a crop of fruit during the coming season. Unfortunately, as regards the bullfinch, the gun is the only effectual remedy, as no attempt to intimidate or deter him will succeed.

P. GRIEVE.

Culford, Bury St. Edmunds.

EFFECTS OF THE FROST IN NORTH DURHAM.

WHEN the thermometer falls 6° below zero, one naturally expects that nothing, except the most hardy plants, will pass through the ordeal scatheless. On December 7 we had the amount of frost just mentioned, but at that time we had a covering of snow on the ground of from 2 ft. to 2½ ft. in thickness. Even this, however, did not prevent the frost from mutilating many of our finest shrubs. In some places the common Ivy on houses is literally browned, looking as if it had been burned instead of frozen. The Irish Yews in our parish churchyard here present a similar appearance, and a few days ago I saw several *Deodars* with the same lifeless look; indeed, they appeared to be worse, for, when shaken by the hand, the leaves fell off in showers. Growing amongst these *Deodars* are numbers of *Cupressus Lawsoniana* which are not in the least affected, nor is the *Arbor-vitæ*. Of Portugal Laurels many fine specimens are apparently

killed. At Lumley Castle I noticed a line of Portugal and Common Laurels planted alternately, and in this instance the Portugals appear all right, while the common Laurels are masses of brown, dead foliage. Cotoneasters, particularly macrophylla, have suffered, while Pyracantha has asserted their superior hardiness. While speaking of Lumley, I may mention that the great weight of snow which we have had has been very destructive to forest trees, breaking off quantities of limbs and branches. In woods here I noticed that the Beeches—of which there are some of the finest in the north of England—had suffered greatly from this cause; many branches 6 in. in diameter have been broken. Numbers of trees and shrubs have been barked by rabbits during the frost; there is scarcely a Thorn hedge in the neighbourhood that does not show marks of their presence. Passing from forest trees and shrubs to the flower garden, I find that Roses have sustained considerable injury, particularly Teas in low-lying and damp situations. In a border of Roses pruned in the latter part of November not an inch of dead wood is to be found, a result which I attribute to the early pruning. Wallflowers, Stocks, &c., have been dreadfully mutilated. In the kitchen garden autumn-sown Lettuces, except where very strong and the situation favourable, are all killed; the same remark also applies to Cabbages, Winter Spinach, &c., and Curled Greens, a staple winter crop hereabouts, also presents a woeful aspect, being all cut down to near the ground, and the whole crop consequently lost. Broccoli has fared no better; Savoy only have successfully resisted the frost. A well-known market grower here has directed my attention to his Pear trees, the blossom of which he imagines is killed. The wood of last year's growth appears sound and good and in a healthy condition, but this remark does not hold good as regards the spurs or blossom buds, which, when cut across, have a blackened appearance at the core.

TYNEDALE.

The Weather in North Nottingham.—Another fall of snow occurred here on the 18th of December, and covered the ground to the depth of 3 in. On the morning of the 18th we had 14° of frost. On the 11th and 12th of January the frost was likewise very severe, but on the 13th a rapid thaw set in, with rain on the 14th, and the 15th was very mild and sunny. The frost again returned on the 16th, and still continues. The effects of this variation of temperature on the early Broccoli and other vegetables, where not protected, are now apparent by the odour which they are emitting. I am afraid that as soon as a general thaw sets in the greater part of these crops will soon get into a rotten state. It will, therefore, be requisite to attend to raising spring substitutes as early as possible by sowing Carrots, Lettuces, Radishes, in pits and frames, where these structures can be used.—WILLIAM TILLEY, *Wellbeck*.

So-called Macadamising.—If the late Mr. Macadam, of road-making eminence, could return to this mortal life, he would be shocked to find how great atrocities are committed in his name, and there can be little doubt that he would repudiate with indignation the term "macadamised" as applied to the roads subjected to the process known by this designation. Macadam's roads, as constructed and repaired under his own superintendence, and according to the system originated by himself, were formed entirely of angular pieces of stone of such a size as to pass freely through a ring 2½ in. in diameter, and which were not above 6 oz. in weight. Modern contractors, however, instead of adhering to this method, cover the roads with large, jagged stones, rendering them unfit for traffic, and, owing to the supineness of the vestries, are allowed to "macadamise" to their hearts' content in this fashion, without any reference to the safety, comfort, and convenience of the public. Some of the principal inhabitants of Paddington, indignant at the condition of the roads in that parish, sent a deputation to the vestry at the meeting of that body the other day, with a memorial complaining that Macadam's system is not being carried out by the contractor, or enforced by the officers of the vestry. On the contrary, granite is used of excessive size and weight, and, even if the stones used were of the proper size, the repairs, the memorialists assert, are done in an unscientific and, consequently, extravagant manner. For two months the rate-payers have been taking notice of the local repairs in the parish, and have taken stones from the roads and the heaps in the stone yard, samples of which the deputation produced before the vestry. These stones are of large size: "huge layers of granite cubes," many inches deep, are, it is complained, spread over the road that is under repair, and filled in with fine gravel and sand. The gravel, in course of time, works up into mud, which has to be carted away, leaving holes for water to lie in, and ridges for horses and foot passengers to trip over. There is also great danger to the springs and wheels of carriages and carts. The subject was referred by the vestry to the Highway Committee, and in, justice, at least, to the memory of Macadam, it is to be hoped that some better system will be adopted.—"Pall Mall Gazette."

GARDENING FOR THE WEEK.

Conservatory.

The temperature required now for some time, with a view to rendering the house enjoyable, as well as suitable for the plants usually brought on into flower in other structures, will be sufficient to facilitate the blooming of many others that do not require forcing, but which, to have them in flower through the winter, need a little more heat than that afforded by an ordinary greenhouse.

Epacris.—These are not nearly so much used at the present day for conservatory decoration as their merits entitle them to be. There are numbers of kinds naturally disposed to bloom in the winter, but they flower much freer and fuller if placed in a temperature such as conservatories are ordinarily kept to at this time. Amongst them are the erect-growing varieties of *E. hyacinthiflora*, *candidissima*, *carinata*, and *fulgens*. In the more bushy-habited kinds the white *Lady Panmure*, *Salmonia* (salmon colour), and *Sunset* (fiery red), with others of intermediate shades, will, if accommodated with the little extra warmth to be obtained here, open their flowers much freer than when kept cool, and continue blooming for many weeks. They are much more generally useful than winter-flowering Heaths, on account of their being more easily kept in health, giving greater diversity of colour, as well as brighter and more cheerful looking blossoms, and better adapted for cutting. With the erect-growing kinds especially it is necessary to considerably reduce the preceding season's growth; consequently, the whole of the shoots have to be shortened back, and they may, where cut flowers are wanted in quantity, be so treated whilst in bloom. The bushy growers will also bear the knife freely. For the same reason, there need be no hesitation in cutting their shoots when in flower.

Acacias armata and Drummondii.—Amongst the many species belonging to this extensive family of handsome plants the great majority are too large growers or, through other causes, not well adapted for cultivating in pots, but the above two are exceptionally useful in this way. If the plants have made their growth early in summer and are well ripened up, the temperature of the conservatory will bring them on into bloom quickly, and the flowers will last longer than if developed in more heat. Both these Acacias, when they have attained anything near the size required, will be benefitted by three-fourths of the current season's growth being reduced.

Daphne indica.—This is another plant which should find a place in every conservatory, as its presence alone, without the aid of any other sweet-scented flowers, is sufficient to keep up the most agreeable perfume. Both the white and the pink bloomed varieties deserve growing. They will also flower much freer with the little extra warmth they receive here. Their agreeable scent is frequently the cause of more of their flowers being cut than is consistent with the well-being of the plants, which, unlike those mentioned above, cannot bear much cutting, unless, in the case of individual specimens that are very strong, and in this matter the cultivator can always be guided by the condition of the plants; if not possessing more than moderate growth, two or three wood-buds only will be found immediately round the base of the flowers. If strong, a number will exist at the base of the leaves lower down, in which case there need be no hesitation in cutting the flowers at the extremity of the shoot, leaving two or three of these wood buds to go on for another year, whereas, if the bunch of bloom from the weakly plant be cut, with the necessary wood and leaves attached to it, many of the shoots so reduced will make no growth at all the ensuing summer. It would be found much better if such plants as these were grown in considerable numbers in every establishment where choice flowers are in demand, rather than cultivating quantities of plants very inferior in their general usefulness to them.

Oranges.—Where these are treated so as to keep them in a healthy, vigorous, thriving condition, furnished with plenty of good deep green-coloured foliage, although old-fashioned, they are amongst the most effective and useful subjects that can be introduced into a large conservatory, bearing fruit in different stages of development for a great portion of the year, and producing plentifully flowers alike acceptable for the odour they give to the structure they are in, and also for cutting. There is one drawback to their cultivation, with which those who have had to deal with them in most cases will have become unpleasantly acquainted, their liability to the attacks of some of the worst insects that prey upon cultivated plants, particularly brown and white scale. Where the latter exists on large specimens it is impossible to keep them in health without continual attention. Now whilst they are dormant an effort should be made to get these pests well under; they may be altogether eradicated

by repeated dipping or syringing with strong insecticide, but to accomplish this it will often be found necessary to sacrifice the flowers for a season, as the continued washing with a solution sufficiently strong to destroy these most difficult of all insects to kill, frequently has the effect of stopping the development of the bloom buds, but the loss of a season's flower will prove to be well compensated for by the improved after condition of the plants and the great saving in labour. In small conservatories a few medium-sized plants of the ordinary sorts of Orange will associate well with Camellias, and the small-growing Otahite kind that fruits so freely when not more than 12 in. or 15 in. high will be found suitable for standing in vases on brackets, or other prominent positions in either large or small houses.

Correas.—Amongst smaller-flowering, hard-wooded plants that keep on blooming for a considerable time, and are well adapted for conservatory decoration, are several of the varieties of Correa, of which may be mentioned *C. cardinalis*, *C. Brilliant*, and *C. bicolor*. The blooms last long on the plants, and, hanging gracefully as they do from the small slender branches, will be very useful in combinations of cut flowers.

General Keeping.—Complete order as to the cleanliness of the pots, tubs, and boxes wherein plants are grown, as well as the floors, stages, &c., in all houses is quite as essential to render them attractive as it is to secure the healthy condition of the occupants, and at no time or place is there a greater need for this than in conservatories during winter. By continual attention to this matter much better results will follow at an absolutely less expenditure of labour than where a general overhauling is made from time to time, and in the intervals doing little in this direction.

Greenhouse.

Kalosanthes.—There are few more useful plants than these for general decorative purposes, and coming in, as they do, in the middle of summer, when comparatively few plants are in bloom, coupled with the fact that they can be either made to do duty in conservatories, halls, corridors, rooms, or any place where flowering plants are required, makes them doubly serviceable. They will grow in almost any description of soil—peat or loam—the principal essentials to their free blooming being that the summer growth is thoroughly ripened and that the plants are kept now in the lightest position available, with their heads close to the glass. From their free disposition to root they can be propagated at any time of the year. If cuttings are put in at once time will be gained, as, if subsequently fairly treated, good blooming plants may be had in eighteen months. Cuttings can be got from any established plants, selecting the strongest shoots that are not going to flower, which will be easily discernible, putting three or four together in small pots in sandy soil and placing them anywhere where the temperature is a little above that of an ordinary greenhouse, but not enclosed under a bell glass or propagating frame, which, in their case, is unnecessary. Moderate-sized plants in from 8 in. to 10 in. pots are the most serviceable. Those that are intended for flowering the ensuing summer should now have their shoots regulated with a few stakes and ties just sufficient to keep them in an erect position.

Boronias.—Than these in the shape of small and moderate-sized plants, there is nothing more elegant in habit, or more suitable for greenhouse and conservatory decoration; the length of time they will last in bloom—three or four months—is an advantage. *B. Drummondii* and *B. pinnata* will be now coming into flower, and will keep on blooming through the winter and spring. *B. elatior* and *B. megastigma*, comparatively new kinds, are both beautiful, and *B. serrulata*, later in its flowering, is most desirable on account of its perfume; a small plant in a 6 in. pot will agreeably scent a large house. If a few of these plants are grown for interspersing about the greenhouse or conservatory, their distinct drooping habit will do much to relieve the over-sameness of *Pelargoniums*, *Fuchsias*, and the like. If kept in a low temperature at this time they are rather subject to mildew, but if accommodated with 40° in the night and a rise of a few degrees in the daytime, they are not liable to suffer in this way.

Chorozemas.—For a like purpose in giving variety, these will be found of very easy growth, producing for a considerable time their brilliant flowers in profusion. If a few varieties, such as *C. cordatum*, *epilobum*, *C. varium* Chandleri, and *C. varium* nanum, are grown in moderate-sized pots, they will do good service through the spring months. Their healthy green foliage is little subject to the attacks of insects, except red spider. These plants will bear keeping cooler than the *Boronias*; the small amount of tying they need should now be done.

Epiphyllums.—The presence of the stronger-growing and larger-flowering kinds of *Epiphyllums*, now so seldom seen in greenhouses, is much missed. The grotesque habit of the plants is worth taking into account, and the brilliance of their flowers has no equal. There is little trouble involved in their culture, and they will bear comparative neglect and still succeed, provided a few details are not lost sight of. Plants that have had their growth well matured during the summer, which is essential to their flowering, by exposure to all the sun possible, should now be kept at the warmest end of the greenhouse with very little water at the roots, only just enough to prevent them shrivelling too much, for if, whilst subject to a somewhat low temperature, the soil in which the small amount of roots they make exists is at all over moist, the fibres will rot, to which cause may be often attributed their not blooming freely. *E. Ackermannii*, *E. creatum* *atro-sanguineum*, *E. speciosissimum*, and *E. speciosum* *superbum* are much more deserving of cultivation than many of the weedy subjects that now find favour. Plants of *E. truncatum* intended for late flowering to come on with just warm greenhouse treatment must likewise not have too much water at the roots until the advancing season affords more warmth.

Statice.—The long-continued production and enduring nature of the flowers of these, combined with their colour and distinct character, make them more deserving of general cultivation than they receive. As it is, they are much more confined to those who grow plants for exhibition than for home decoration; whereas if they, and such as the before-mentioned plants, are allowed a place amongst the softer-wooded greenhouse subjects usually met with, a much more effective combination is produced than where they are absent. *Statice* are strictly greenhouse plants, but, at this time of the year, they should be kept in a temperature of from 40° to 45° in the night, as, unlike many other hard-wooded plants, they are never absolutely at rest, growing slowly through the winter; their roots are also continuously active; consequently, even at this season, they require the soil to be kept a little more moist than for most plants. There is one point in their cultivation that requires attention: the old leaves, as the gradually decay, do not fall off as in the case of the generality of plants, but hang dead upon them, and, if not removed when in this state, they are apt to go mouldy, and sometimes destroy the shoots to which they are attached.

Pot Roses.

Tea Roses in pots grown out-of-doors in summer and treated with the intention of having them well furnished with buds in the autumn, and then placed in a greenhouse temperature to enable the full development of these outdoor formed buds without much fire-heat, which they will do up to the close of the year, will now need to be managed with a view to their doing service in a like manner next autumn, for, when required to produce flowers in this way there should be no attempt to force them on so as to make further growth and bloom after they have borne the first crop; but they ought not, as is frequently done, to be turned out for some time yet into cold frames where the soil about their roots will be liable to get frozen, unless precautions are taken to prevent this, as such treatment would affect their now more or less active roots and interfere with the growth they are expected to make during the summer. They should be put in a house or pit where there is the means of excluding frost, and any pruning that may be necessary it is better to carry out at once, allowing them to remain here until the spring, by which time their young shoots will begin to move, and whatever potting is needed can be done, and when the season is past for any frost likely to injure them, they may be turned out-of-doors where they are to remain for the summer with their pots plunged in ashes. Where there is an attempt to supply Roses all the year round, plants thus treated fill an important place, their bloom coming in before that of those subjected to more heat, but if they are to increase in size and vigor as is desirable, they must even now, after flowering, be cared for in a manner different from the rough usage to which they are often submitted when their blooming is over.—T. BAINES.

Flower Garden.

The first frost which commenced early in December and continued to the 26th of that month, caused but little apparent injury, doubtless on account of the snow covering and comparatively calm state of the atmosphere, but the second frost, accompanied as it was with strong north-easterly winds, attacking vegetation full of moisture, after the rapid thaw, with which the first frost disappeared, has been most disastrous to what of late we have been wont to term hardy plants. *Eucalyptus globulus* is killed to the ground; *Phoradendron tenax* is much injured; Australian *Droseras* are, I fear, quite killed. Of evergreens the Japanese *Bonnyons*, *Laurestinus*, and common Laurels are the only shrubs that at present seem injured, and of these none are seriously hurt, but it is rather a puzzle to know how it happens, that whilst these so-called hardy plants have

suffered *Chamærops Fortunei*, *Camellias*, and *Skimmias* should have escaped, as they certainly have done here. Plants of doubtful hardiness should still have the needful protection applied. Mulchings of stable litter at the base of the plants or over the beds in which they grow is a sure preservative of them to the ground line. All Roses should have such a mulching. The frost has quite upheaved many small plants, especially hardy kinds that were split up in autumn for next summer's bedding arrangements. Sedums, Saxifrages, *Sempervivums*, Mints, Arabis, &c., will, now the frost has gone, require to be pressed firmly into the ground, and spring flowers of every description require the same attention. The tenderer kinds of bulbs will need covering in severe weather, which can readily be done with evergreen branches, or with mats supported on hooped sticks, the ends of the mats being pegged to the turf. Beds of Cannas will be sure to suffer this winter, especially if not well drained; it will, therefore, be well to divide any plants that have been wintered under cover, and place in gentle warmth. Seeds of them, too, sown now will make good plants for putting out at the end of May. Soak the seeds for a couple of days previous to the sowing, and germination will take place immediately. *Acacia lophantha*, one of the most graceful and effective of sub-tropical plants should also be sown now in order to have good plants for putting out in May. Another fortnight will be sufficiently early to sow *Solanums*, *Ricinus*, *Wigandias*, *Ferdinandias*, and other free growers, as they are apt to get pot-bound and stunted before planting time when sown too early. Pelargoniums that were not propagated in sufficient quantity in the autumn should now receive attention; three cuttings in a 3-in. pot make fine plants for turning out to the beds without division. They strike freely at this season on a dry, warm shelf in a Pine stove, Peach house, or Vinery, where there is a minimum temperature of 55°. As bedders the following are amongst the very best, viz., tricolor *Sophia Damaresque*, bronze or zoned *Rev. W. F. Radclyffe*, and white variegated *May Queen*. These three varieties, with the addition of the sweet-scented and variegated *Lady Plymouth*, are the cream of all the variegated bedding Pelargoniums; they are compact in growth and contrast well with such plants as *Coleus*, *Iresine*, and *Amarantus*. When the weather is open trench and dig all beds and borders that are vacant, and each bed should have manure proportionate to the requirements of the plants intended to grow in it. *Calceolarias*, *Verbenas*, *Violas*, and all sub-tropical plants can scarcely have too much. Pelargoniums flower best when the soil is poor, but the beds should be deeply trenched with the view of resisting drought. Well roll all walks immediately after a thaw, they will dry off hard and smooth, but if left till dry the roller makes little impression on them. Complete re-gravelling or re-surfacing and turning walks as the weather permits, in order that they may get consolidated before a drier period arrives. The same remark applies to lawns, which at this season can hardly be rolled too much.—W. W.

Auriculas.—These have been still further reduced in size by the second severe frost, and they are now more completely at rest than I have ever before seen them. It has been necessary to go over the plants again and carefully remove decaying leaves and other extraneous matter, and to press the mould where it has been much loosened round the plants. Prepare compost for surface-dressing, an operation which must be done as soon after February 1 as the state of the weather will permit. I generally reserve a portion of the compost that was prepared for Hyacinths, which contains about one-fourth of its bulk of rotten cow manure. To this I add about as much more cow manure, and then I find it to be a most excellent dressing. The surface soil must be removed down to the first roots; indeed, it is as well to remove as much of it as possible without injuring any roots; then add the compost, pressing it in firmly.

Carnations and Picotees.—The weather has been very trying for plants of these, possessing a delicate constitution, that were planted out-of-doors late in the autumn. I find that such plants will not even live out-of-doors near London unless the precaution be taken to place a glass protector over them; it is not the cold nor even severe frosts alone that cause the injury, but continued wet combined with frost. A good plan is to place bell-glasses over the plants, but they must be raised about 1 in. or more from the ground to permit a continued circulation of air. It is worthy of note that growers of these flowers for exhibition as far north as Newcastle-upon-Tyne succeed remarkably well with plants put out in beds in the autumn. They use, of course, a good free porous compost, the beds are well mulched with dry, rotten manure, and the plants are held in their places by a neat stick. Hardy Cloves and others in open borders must be looked over, and loose plants secured in their places; they will not succeed if the roots be not made sufficiently steady to withstand a gale.

Hollyhocks.—These cannot be propagated so freely as Dahlias; therefore it is desirable to begin early. When a Dahlia root is lifted

in autumn there are no signs of any growth from the base of the stems, but with Hollyhocks the case is different; many of these will have a tuft of growths round the base of the stem, and if the plants have been in a house from which frost has been excluded, some of these may now be taken off, and either be inserted in sandy soil as cuttings, or they may be grafted on to bits of healthy roots. In either case care is requisite in watering, as they are liable to damp off, especially in a damp hotbed; the best place for them is a close frame inside a forcing house, with bottom-heat supplied from hot-water pipes; each cutting or grafted root should be inserted singly in a small pot, and the pots should be plunged in moderately damp sand. Keep the frame close at first, and apply water sparingly, but not over the leaves.

Pansies.—Those in pots in frames have made no progress, but advantage must be taken of fine weather when it comes to push the plants into active growth, as the principal object of growing the plants in pots is to have an early bloom. See that no insect pests are allowed to remain upon the leaves; a reddish-coloured aphid, to the attacks of which they are liable, will quite spoil them if not immediately destroyed. Red spider can stand more cold than some imagine, and will make its appearance with the first mild sunny weather. Slugs will also eat out the incipient flower buds.

Primula cortusoides amena and its varieties frequently suffer from neglect at this season; the crowns push early, but they will not become very strong if the roots are allowed to become too dry. See that they are kept fairly moist. Our plants are in cold frames at present, and the pots are plunged in Cocoa-nut fibre refuse.

Aquilegias, such as *A. corulea*, *A. alpina*, *A. chrysanthra*, *A. glandulosa*, *A. californica hybrida*, and *A. corulea hybrida*, are all grown in pots and cultivated in the same frame with a few species of *Primula*. The leaves of all of them are liable to the attacks of red spider, and they can be treated to keep this pest in check when grown together.

Tulips.—These are now appearing aboveground, and in cold, wet districts it is necessary to place some covering over the beds to throw off superfluous wet and to protect the plants from severe frost. Growers for exhibition in the midland counties have strong iron hoops bent over the beds, which are kept in position by connecting rods of iron. These are covered with mats or stout canvas only when the weather is severe. Any covering left over the plants in fine weather tends to weaken them. I have not yet found it necessary to protect our beds near London at this season. When the leaves are dry frost does not seem to injure them, but if water be collected by the leaves and a severe frost occurs danger is to be apprehended.—J. DOUGLAS.

Indoor Fruit Department.

Vines.—Early forcing is a difficult and slow operation this season, and such it must continue to be so long as cold weather lasts. Continuous hard firing is in the highest degree debilitating to the Vines; so, for the present, low night temperatures should be the rule, and forcing should be done by a slightly increased day heat. Such increase of warmth is imperatively necessary where the Vines are advancing towards the flowering stage; but, where the buds are as yet unexpanded, make no advance in temperature till a favourable change in the weather takes place. Outside borders should be well protected in order to prevent them from being chilled by snow or heavy rains, and, if fermenting material be used for increasing the temperature of the soil, great care will be required to prevent overheating. Early Vinery borders should all be inside where Grapes have to be ripe in April and May. All Grapes now on the Vines should now be cut and stored in a dry room, for, if not done soon, a recurrence of mild weather will at once put the sap in motion, and two evils will be the result, viz., the Vines will bleed by being pruned so late, and the Grapes will burst as soon as they are put into the bottles of water. When the pruning is done, thoroughly cleanse the houses and Vines by rubbing off any loose bark, and painting them with the usual composition, both as a preventive against and remedy for insect pests. The borders should then be renovated by clearing off all the surface soil, working it out from the roots with hand-forks and replacing it with the best loam that is to be had, with which should be mixed a liberal allowance of ½-in. bones and wood-ashes or charcoal, the whole being pressed firmly about the roots. For the present, guard against exciting the Vines into activity by keeping the house as cool as possible, a month's real rest being more beneficial than twice that amount of uncertain rest.

Peaches and Nectarines.—These are most impatient as regards artificial heat, and hard firing proves fatal to them, therefore be content with a slow advance till daylight is longer and sunshine probable, when a push can be made with greater certainty of attaining

success. Any in flower should be artificially fertilised to insure a good set. An active boy, with a camel-hair pencil, will do thousands of blossoms in an hour. The atmosphere should now incline to the dry side, and a chink of air be constantly kept on, but guard against the slightest current of cold air, which soon shrivels up any blossoms with which it comes in contact. Houses now being started should have the borders examined as to moisture; if dry soak them well with tepid water. Outside borders should have sufficient protection to exclude frost, snow, and cold rains, but artificial warmth is neither necessary nor desirable. Let late houses have the necessary pruning and cleansing on the first opportunity, and induce effectual rest by keeping the temperature at the lowest point commensurate with the future well-being of the trees.

Figs.—Usually the earliest of these are produced by means of pot culture, and with liberal treatment both as to attention and feeding, good returns can be had by this mode of growing them. The embryo fruit of those that were introduced into warmth in November will now be slowly developing, and if the drainage be open water will be required most days, for, after this stage the plants are allowed to become dry, the worst results may be anticipated. If the plants be plunged in a bed of Oak leaves (the best heat-producing medium for them), care must be exercised that the heat does not become excessive; 70° should never be exceeded, and the moment the roots protrude out of the bottom of the pots disperse with bottom heat entirely. A moist atmospheric temperature, averaging 55° by night and 70° by day, is necessary for plants at this stage of growth. Where the trees are planted out in inside borders, which is the best plan, such borders should at once have the needful annual dressing. If confined within reasonable limits, and such is necessary for fruitfulness, it will be impossible to give them too rich a top dressing. Rich loam, well-decayed cow manure, and lime scraps, in about equal proportions, constitute the best materials for this purpose. Water with tepid water to consolidate the dressing about the roots, and the house may then be closed, but fire heat should not be applied for a fortnight longer. Winter pruning of Figs is rarely necessary if summer pinching has been regularly carried out, but to prevent crowding it may be desirable to cut out any straggling, spurs, or eyeless shoots when the trees are being overhauled for their winter dressing.

Strawberries.—Those in flower should have the pollen distributed daily, and air given freely whenever the air outside is free from frost. Keep the plants reasonably moist, and avoid splashing the flowers with water. As soon as the fruit is set, thin it out to six or at most eight fruits to each plant, after which manure water may be given twice a week. Successional batches of plants should be placed in warmth fortnightly in order to keep up a continuous succession of fruit till open air crops are ripe. As a rule, about three dozen plants put into warmth fortnightly will ensure a moderate succession of fruit. Shelves for plants that are to remain in the one position till their fruit is ripe, may have a coating of horse droppings or turf cut the width of the shelf, and laid Grass side downwards; into this the roots soon find their way, and much labour is saved, as water is not so frequently required as it otherwise would be. The plan has one drawback only, and that is, the drainage sometimes gets choked, a matter easily avoided.

Pines.—Under the present unpropitious state of the weather, the rearranging and potting of Pines are impossible, but advantage must be taken of the first mild weather to accomplish these operations, as it is important that fruit now showing should have a bottom heat of 85°, and this cannot be maintained until a renewal or addition of fresh leaves or tan, as the case may be, is made to the bed. Till such extra bottom heat can be applied, do not increase the atmospheric temperature, as both should be advanced simultaneously. As to watering, look over the plants every week, and when strong fires have to be kept going, twice a week may be requisite, especially in the case of plants near the pipes. Atmospheric humidity is a necessary element in Pine culture, but requires judgment in the application; it should never be applied to such an extent that the condensation drops like rain into the hearts of the plants. The state of the outside air should afford some guide in this matter. All should bear in mind that an atmosphere continually surcharged with vapour is just as injurious as a dry one, and this may lead to the adoption of measures to avoid either extreme.

Melons.—Do not be in a hurry to plant these out. At this early season there is little danger of their being pot-bound, and the plants will make better progress if kept on shelves near the glass for another week or two than planted out. The soil should be got in to admit of its getting warmed through thoroughly. Moderately stiff loam, without any admixture whatever, is best, and if fresh dug from the pasture all the better. It should be well pounded when put in the

bed, and the lighter the soil the harder should it be made. Make another sowing in the manner recommended in a previous calendar.—W. W.

Storing Ice.—Mr. Dennis's icehouse (p. 59) will be found to be an excellent one; but as many do not possess such a structure, I would suggest the following method of storing ice, which I have seen practised, and which will be found to be a very easy and simple plan. A foundation of faggots was laid so as to admit of the water passing readily away, and upon this was thrown the ice, which was pounded as small as possible. Faggots were then used to keep the stack together; they were supported by stakes driven into the ground, and between them and the ice straw and sawdust were placed to keep out the air. When the heap had attained the required height, a quantity of leaves, then a layer of straw and faggots, or boards, constituted a covering. The ice kept nearly as well and as long in this way, as that within a structure similar to the one recommended by Mr. Dennis.—J. S. T.

Garden Labels.—Everyone knows the necessity of having plants in gardens properly named, and in order to do this effectually it is equally necessary labels should be used on which the names can be legibly written; this can of course be done, as it usually is on wood, terra cotta, zinc, and the like, but then the writing soon becomes obliterated. We saw, however, the other day a label which seemed to be an improvement on existing kinds as regards durability. It was made of prepared green paper or parchment, neat in shape and appearance, and on which the writing could be distinctly seen, and which latter never becomes obliterated until the label is thoroughly worn out. These labels, which are made by Messrs. Tebbs, are extensively used in the gardens at the Poles, near Ware, where they are highly spoken of for use in Orchid houses or other damp places, as well as out-of-doors. It is also stated that after having placed them under water for a day or two the writing was uninjured, and the label as firm and good as before.—S.

Market Gardening and Want of Market Accommodation.—"A Market Gardener" writes to us ("Pall Mall Gazette") as follows:—Your note on the dearth of vegetables is accurate enough, but the suggestion to farmers to take up market gardening requires consideration. In the first place, the high cultivation required in market gardening demands a very large increase of capital, which not every farmer has at his disposal. In the next place, one of the main causes of the high price of vegetables is the cost of their conveyance to markets, on the one hand, and the difficulty and cost of the conveyance of the requisite manure for cultivation on the other. All the land suitable for market gardening within a reasonable distance of London is already put to that purpose, and if more land were to be taken up it must be further off, and at an increased cost of carriage. But the one great difficulty is the absolute want of proper market accommodation for vegetables. Go to Covent Garden and the neighbourhood of the Borough Market, two of the chief depôts, when the market carts are rolling in from all quarters with their produce, and you will then be able to form some idea of the utter want of suitable accommodation. Every street anywhere near these markets is blocked with dense crowds of cabbage carts. The nuisance to persons passing through these districts is already very great, and it would be well nigh impossible at all largely to increase the present supply. There is no doubt that farmers and landlords just now are having an exceptionally hard time of it, and it is not easy to see when or how times are to mend. If, therefore, any possible means could be devised for giving agriculture a fresh impetus or new grooves to work in, it would be of the utmost importance. Market gardening, however, at the very best, could be but a very small help.

Ivy in Fern Cases.—It is a common occurrence to see in the houses of persons who do not give their minds to the matter, Fern cases without Ferns, or with a few deplorable bits that, we are assured, will be very fine some day, but which too evidently will become smaller, and soon disappear. That the planting and managing of Fern cases is a very simple matter need not now be insisted on. It is a fact that thousands of persons start Fern cases and aquariums, only to fail in some way or other, and it is more of a moral than a scientific question, as to why and how it all happens. I wish to point out to all who possess Fern cases, and can make nothing of them, that they make capital Ivy gardens, and Ivies will generally live in them without any management at all, provided they have light always, and water occasionally. As a matter of course, the smallest-leaved Ivies should be planted, and they should be nicely trained on wires. When a case filled with small-leaved Ivies is doing well, it is a charming object, and much to be preferred to one occupied by two or three dying Ferns.—"Gardeners' Magazine."

ANSWERS TO CORRESPONDENTS.

Early Melons.—A. D. (p. 69) thinks that "J. W." must have been puzzled when he got seven Melons recommended and only asked for two, but if "A. D." had noticed "J. W.'s" question he would have seen that he asked for two Melons suitable for an early crop to grow in a span-roofed pit, and two sorts suitable for a frame as a second crop. The reason I recommended Victory of Bath and Paradise Gem for an early crop was because they both stand any amount of forcing, and Paradise Gem will be ready a week or ten days before Read's Scarlet Flesh, and equal in quality, while Read's Scarlet Flesh and Victory of Bath come in together under the same treatment, and ten days is a consideration to a gardener as regards early Melons. Victory of Bath does fairly well in a hot-bed frame, but it is not so hardy as Golden Queen.—JAMES SMITH, *Waterdale*.

Fruit Trees in an Orchard House.—In answer to "J. E. W." (p. 69) allow me to say that these should be plunged to within 2 in. of the rim of the pots. Plunging maintains a steadier root temperature than 6 in. flower-pot should be placed at the bottom of the hole in which to set the tree, in order to prevent the roots from running into the soil; there should also be good drainage to allow the water to pass away rapidly, as stone fruit can scarcely have too much water when in full growth. Deer, sheep, or cow manure makes a very suitable fertiliser for trees in pots. It should be made in small quantities so that it may be used fresh, and as soon as the fruit is fairly set, supply it regularly in a weak state till the fruit begins to change colour, when clean water must take its place.—JAMES SMITH, *Waterdale*.

How Best to Combine Fruit and Flowers.—A. B. (p. 69) may rest assured that she has ample glass accommodation to have a superabundance of flowers all the year round. It is a hopeless task to attempt to grow fruit and flowers successfully in the same house, and therefore the plan suggested of assigning particular plants to each kind of house should be abandoned, and the hothouses only used as auxiliaries to bring plants on for the conservatory. The first step should be to make the greenhouse suitable for holding plants by removing or covering up the tank so as to remedy the moist atmosphere complained of, and also to arrange the heating apparatus so as to command a temperature of from 42° to 45° during the winter instead of the extreme heat she seems to have. By setting under a hot and cold pit for the use of the flower department, and using the other houses for bringing things on when that can be done without injury, an ample supply of flowers should be obtained, but, above all, it is essential to have a gardener who understands the business, otherwise the very best appliances will result in failure.—T. B.

Conservatory Climbers.—A correspondent asks (p. 69) for a good plant to grow on a trellis on the back wall of a conservatory; let me recommend him to obtain a good strong healthy plant, 3 ft. or 4 ft. high, of *Luculia gratissima* at once. What could be more delicious than the fragrance of this charming winter-flowering plant adjoining the drawing-room? The old plant here has just passed its best, after pouring out its fragrance from over 600 heads of bloom, commencing about the end of October, several of the heads of bloom measuring 1 ft. in diameter. Could a artificial compound manure has put quite new vigour into the old plant; this plant compound just suits the *Luculia*, I never saw the heads so large as they have been this year. The temperature in which this plant grows varies from 40° to 48° without sun heat, and it needs little attention beyond spurting and tying to the trellis. The soil which we use is good sandy loam mixed with sand and leaf mould.—WILLIAM CULVERWELL, *Thorp Perrow*.

Mistletoe on the Oak.—Mistletoe is reported to sometimes grow on the Oak in England. Can you kindly name a few of the places in which it occurs in the tree?—J. H. [According to Dr. Bull, of Hereford, Mistletoe grows on the following Oaks:—1. On the Easton Oak, on Ridgway Hill, Earsdon Park, Herefordshire, known for many years; first described by Mr. Edwin Lees in the "Botanical Looker out" more than twenty years ago. The tree is nearly 100 years old, and has several Mistletoe bunches upon it. 2. The Oak at Tedstone, Delamere, Herefordshire, described in 1851 (Dr. Bull), in the Woolhope Club's "Transactions;" a middle-aged tree with a large bunch on it. 3. The Oak at Haven in the ancient forest of Dredford, North Herefordshire; described and figured in the Woolhope Club's "Transactions" (Dr. Bull). 4. The Bredwardine Oak, on the estate of the Rev. Sir G. Cornwall, Bart., discovered in 1871; also described in the Woolhope "Transactions" (Dr. Bull), where a fine photograph is given of the tree. The parasite shoots out from it in fifteen different places. 5. The Brinsop Oak in the Old Town Field, Herefordshire, discovered in 1871 (Dr. Bull). 6. The Hop Meadow Oak, Hampton Bishop, Herefordshire; discovered by the Rev. H. J. D. Stillingfleet, Rector of the parish, in 1872. 7 and 8. Two Mistletoe Oaks on the Buckenhill property belonging to Mr. J. H. Barneye Lutley, near Bromyard; one discovered by the Rev. H. W. Welter, curate, in 1873, and the other the same year by Mr. Shirley Stephenson, son of the Rev. Nash Stephenson, vicar of Bromyard. 9. Oak at the Hendre, Llongatock, Llangatock, Monmouthshire, discovered in the winter of 1870; described and figured in the Woolhope "Transactions" for 1871 by Dr. Bull. 10. Oak at Lindridge, Worcestershire; discovered in 1870 by Mr. John Twinnierow of Witely, and described by Mr. Edwin Lees in the Woolhope "Transactions" for 1874 (Dr. Bull). 12. Frampton-on-Severn Oak, Gloucestershire, belonging to Mr. Clifford (*Ibid*). 13. Mistletoe Oak, near Knightwick

Church, Worcestershire; discovered in 1871 by Miss Eliza Walker, of Knightwick. 14. Oak at Burningsfield Farm, Dunsfold, Surrey, the property of Mr. W. L. Woods. (Woolhope "Transactions," 1864). 15. Hackwood Park Oak, near Basingstoke, Hampshire (*Ibid*); a very old tree. A specimen of the Mistletoe from this tree was sent by the first Lord Bolton to Sir Joseph Banks, who described it in the Philosophical Transactions. There are notices of several other Mistletoe Oaks and their former localities recorded, but these are all the instances, it is believed, in which the Oaks are now known to be living with the Mistletoe growing upon them.]

Names of Plants.—A. A. Thom.—Apparently *Hemanthus natalensis*, not so common as *H. coccineus*, but not rare.

Questions.

Large-leaved Saxifragas.—In "W. D.'s" useful observations on carpeting bulb beds (p. 56), mention is made of the large-foliaged Saxifragas, such as *oppositifolia*. Will "W. D." kindly inform us what Saxifrage he had in view when he wrote *oppositifolia*? I am much interested in Saxifragas, and what I have known as *S. oppositifolia* is not large-foliaged. "W. D.'s" advice is too good to allow of mistakes which have a tendency to throw doubt on the whole if not corrected.—THOMAS WILLIAMS, *Ormskirk*.

Fuchsia serratifolia.—In Harrison's "Floricultural Cabinet" of August, 1845, there is given an illustration of this remarkable and beautiful Fuchsia. I have had it in the open air almost ever since then, but this winter I have lost it. It never flowered well in the open air, but grew freely enough, and was worth growing, if only for its rich green foliage. Is it in cultivation now?—WILLIAM JOHNSTON, *Ballykilbeg, Co. Down*.

Carpeting Bulb Beds.—I wish to thank your correspondent for his answer to my wants in your last week's number, and also to ask "W. D." (p. 55) who has sent a very valuable contribution on this subject, if he would kindly supplement his remarks by a few words on flowering carpet plants for autumn bulbs, both remaining in the ground undisturbed, unless for occasional improvement of the soil, &c. What I wish is to be able to place over a portion of my bulbs, plants beautiful in foliage during winter, and flowering in the autumn. I should also like to trespass so much further on his kindness, as to ask whether all these carpet plants, spring or autumn, might not, if desired, in special cases, be used to cover deciduous herbaceous plants, with a pleasant winter foliage?—J. S.

Filmy Ferns.—What soil do *Todea superba*, *Hymenophyllum flabellatum*, and the like require? What temperature do they need in winter and summer? Is 40° enough in winter?—R. JOHNSON.

Schoolmaster Potato.—Having seen an advertisement in THE GARDEN relative to the above Potato, I have been much interested in the second year the enormous quantity of 60 bushels, I should feel very thankful if the person who accomplished this feat would let the "Schoolmaster" come among us and enlighten our darkness in regard to the matter. Living, as I do, in one of the best Potato districts in the kingdom, I must say that I am incredulous on the subject. However, if the above statement prove to be a fact, then by all means let the "Schoolmaster" go abroad. Let there be no more famine or complaining in our streets after this. Such a feat as the above forcibly reminds me of the miracle of the loaves and fishes.—D. T.

Royal Botanic Gardens, Edinburgh.—Mr. Sadler, the newly-appointed curator of these gardens, first went there in 1854. For some time he was engaged in the conservatories, and also in the propagating department and herbarium. During the summer months he assisted Professor Balfour, the Regius Keeper. In 1858, on Dr. George Lawson (now Professor in Dalhousie College) leaving, Dr. Balfour appointed him his assistant in all matters connected with the botanical classes at the Garden, as well as in his duties as Regius Keeper. In 1861 Mr. Sadler was appointed secretary to the Scottish Arboricultural Society; in 1867 Lecturer on Botany to the Royal High School; and since 1858 he has been the Acting Secretary of the Botanical Society of Edinburgh. In 1869 the Royal Caledonian Horticultural Society awarded him the Neill prize of £50 for his many services to practical botany.

Garden Appointments.—Mr. Thomas Snelling, who has for the last twelve or more years been gardener to B. B. Hunter Rodwell, Esq., Q. O. M. P., at Ampton Park, near Bury St. Edmunds, has been appointed successor to the late Mr. Snelling, as manager of the Ampton Park gardens. Mr. Snelling, who is in the prime of life, is an excellent gardener and plant grower, and has for many years been successful as an exhibitor at the shows of the Bury and West Suffolk Horticultural Society. Under his management it may confidently be expected that the Gardens in question will be unlikely to lose any of their attractions.

Ten Thousand Five Hundred Barrels are a good many Apples—yet this quantity left New York city for Europe on a recent Saturday. There is always a demand for our Apples abroad, even in years of plenty there. While we are glad that the Europeans get our fruit, we regret that but little of the profits of the shipment reaches the hands of our fruit-growers." So says our contemporary, the "American Agriculturist." The facts may be worth the attention of our own growers or landowners.

No. 376.]

SATURDAY, FEBRUARY 1, 1879.

[Vol. XV]

"This is an art
Which does mend Nature: change it rather: but
This Art ITSELF IS NATURE."—*Shakespeare.*

HOW TO HAVE CAMELLIAS EARLY.

It will, I think, be readily admitted that Camellias are the most serviceable and beautiful of all greenhouse plants, but, although this is the case, their value to the generality of growers would be considerably increased could they only induce them to flower earlier. Many make the attempt to get them to do this by putting them in heat with a view to force them, and wonder why it is that their buds fall off instead of swelling and unfolding as they expected to see them. Knowing that plants of nearly all descriptions may be got in bloom out of their natural season by the use of artificial heat, those unacquainted with the culture of Camellias attribute their failure to every cause but the right one, and persevere in the same course year after year till they give up in despair. As many may now be about to try the experiment with a portion of their plants, a word of warning may be useful. The only way to get Camellias to flower early is to start them early into growth, and if this be persevered in for two or three seasons they acquire the habit of flowering in the autumn and winter instead of the spring. By treating some in this manner I always have plenty of blooms in October, and from that time onwards, and these from plants trained on the back walls of Vineries where little or nothing else would grow, owing to the dense shade and absence of light. Any one, therefore, having such places vacant, cannot possibly do better than to utilise them as we have done, and if the work be set about at once, in order that the plants may make their growth when the Vines are forced, there will be a good prospect of cutting plenty of flowers at this time next year. Camellias in pots are all very well for the embellishment of greenhouses and conservatories, but to afford a heavy crop of bloom, and plenty of length of young wood for cutting with it, they must be planted out, as then, with an almost unlimited root-run, their growth is exceedingly strong and vigorous, and the cutting to which they are subjected does them no harm, but is rather necessary and beneficial than otherwise. With us they make shoots from 1 ft. to 2 ft. long in a season, and oftentimes considerably more, and, as they have now nearly filled their allotted space, I never hesitate to cut them hard back, and take a good length of wood with the flowers.

Although Camellias will do fairly well in almost any soil, they succeed best in either good fresh friable loam or peat, or a mixture of the two, and in preparing the border one or the other of these should be made use of and put in to a depth of 2 ft. or so. Owing to the great quantity of water the plants require when growing, and also at the time when they are producing their blossoms, it is very important that they have free and efficient drainage, and the best way to provide this is to place 6 in. of soft red broken bricks at the bottom of the border, and on these a layer of rough turves, to insure the interstices being kept clear and open. Some of the healthiest and best Camellias which I ever saw were grown in pure loam, and if this be used, as it may be with the greatest safety, where peat is not easily and readily obtainable, it should be chopped up and put in in a coarse state so that the roots may be able to ramify and extend themselves quickly. Peat should likewise be used in the same condition, as the tendency of all soils that lie long is to lose their fibre and general porosity, and more particularly is this the case with such as lie in a large body together and are subjected to heavy and repeated waterings like that of a border in which Camellias are grown. There is one thing, however, to be avoided, and that is, leaving no hollow places or cavities when filling in whereby the water may effect its escape without permeating the whole mass, for, if this takes place, plants that appear to have a good deal of water given them get little or none, and frequently languish from want of moisture at a time when they are supposed to have been abundantly supplied.

In turning Camellias out of their pots for the purpose of planting them out, the crocks at the bottom of the ball should be picked carefully from among the roots, and as many of these should be liberated and spread about in the new soil as can be done without risk of breaking or injuring them. They should then be slightly covered with some of the finer portions of the loam or peat, after which the final filling up of the whole border may be proceeded with. A gentle treading will make all complete, except a good watering to be given through the coarse rose of a pot, in order to settle the soil about the balls of the plants, and give them a start. Any tying in of the branches or training that may be required to keep them flat to the wall can best be done by straining some galvanised wire horizontally at from 6 in. to 9 in. apart, running the same through studs driven into the joints of the bricks in order to keep them in their proper position. The moist atmosphere and frequent syringings necessary when forcing Vines just suit Camellias, and I know of no situation better adapted to their growth. They are plants of a shade-loving character, and this shade the Vine foliage affords exactly at the time when it is wanted, which is during the summer months, and at the present season, when more light becomes indispensable, the leaves are gradually falling and admitting it by degrees. No artificial arrangement could therefore answer the purpose in so satisfactory a manner, and as Camellias are in no way subject to insects, with the exception of brown scale, there need not be any feeling of reluctance about introducing them into Vineries on that account. I make it a practice to give them a good washing with the garden engine just before the buds begin to expand, as then the foliage, from being so bright and polished looking, is a great ornament to the flowers, which are thus set off to the best advantage.

It may be that many who have not the convenience of planting Camellias out and growing them on the back walls of their Vineries to get them into early bloom, may have the facilities for doing so elsewhere in pots, and the course I would recommend them to pursue in such cases is to look over the plants which they have in stock and pick out all such as are without flowers buds and introduce them into moist heat soon after Christmas so as to induce an early wood growth. Any forcing house at work will answer the purpose, as it matters little what the variation of temperature may be so long as atmospheric moisture is in proportion, Camellias being plants that endure great extremes without sustaining any harm. This is very remarkable considering how susceptible they are of change, and how quickly they shed their buds when any attempt is made to force them, as then warmth, for a week or two sends the buds off in showers, and should there by chance any remain on, the flowers when they expand are never anything like the size they should be. It should be borne in mind, that not only will artificial heat cause the buds to fall off, but that dryness at the root will produce similar results, and those therefore who have plants they wish to see in full beauty by-and-by, cannot be too watchful of their wants at the present time. The great mistake frequently made, is giving water often and in dribbles, instead of sufficient to thoroughly soak the whole of the ball, and then allowing them to stand till they are in a fit state to have it repeated. The point is to preserve the happy medium. As regards the repotting of Camellias, experienced cultivators differ much in opinion as to the proper time at which they should have a shift; some think that it should be done directly the flower buds are formed, while others are equally persuaded in their own minds that the right season to shift them is directly the blooms fade, and before the young growth commences. For my own part I am in favour of the latter, as during the spring root action is much more vigorous than at any other time; and not only this, but the plants will then better bear any slight check which they may receive than when they are more advanced. The assistance, too, that the fresh soil affords when given them early, must tell favourably on their growth, and consequently on the number of blossom buds which they are able to form over what they would have done had the potting been deferred till a later period. Camellias are fond of liquid manure, liberal supplies of which should be given them from this time till about May or June. I have always seen the best effect produced by administering

clarified soot water, a stimulant that is particularly suitable to most plants, and is as useful as anything that can be used.

S. D.

HELIOTROPES FOR WINTER FLOWERING.

To have Heliotrope flowers in winter there should be a night temperature of 55°, in order to secure a continuous growth, and if the plants occupy a light position, each young shoot will terminate in a truss of flowers, and a long succession will be thus obtained. But if they do not occupy a light position, so that a certain amount of vigour and ripeness may be imparted to the new growth, the shoots will be weak, soft, and consequently flowerless. A shelf near the glass at the end, or amid the heated air at the back of the house, not far from the wall, if the house be a lean-to one, will be a suitable position. During summer the plants must have undergone a suitable preparation. When the stock of Heliotropes is propagated for bedding in spring, a few dozen of the most vigorous plants should be selected, and grown on specially for winter flowering. They should not be allowed to starve in small pots, but should be shifted into larger pots before they receive any check, and, as soon as all danger from frost is over they should be plunged in a bed of coal ashes up to the rims of the pots in the open air. All shoots should be pinched back, to induce a bushy habit, and by so doing flowers will not be permitted to form. The bed should occupy an open situation, and the plants must stand far enough apart individually to permit of a free circulation of air, and so insure robust, short-jointed growth. Such plants when placed on a shelf in a warm intermediate or forcing house in winter, will produce a large number of flowers for cutting from October to February or March. Good little bushes may be had in 5 in. pots; but the strongest will require a size larger. Plunging the pots in summer will save watering, and prevent the hot sun acting so forcibly on the roots at the sides of the pots, from which cause plants that are standing far apart, with their pots unprotected, sometimes lose their leaves. All plants grown for winter flowering are better plunged in the open air in summer than placed on the north side of hedges or walls. It is a mistaken notion to suppose the tops will take any harm from bright sunshine if the roots be protected. This refers to many other plants besides Heliotropes. A few of the most vigorous may, if desired, be trained as standards, with stems 12 in. or so long. By attention to pinching good bushy plants may be had in one season. The dark purple-flowered varieties are the best for winter blooming, as the pale-coloured flowers become still paler in brisk heat, but the dark varieties still retain a delightful tint of purple. Heliotrope flowers may also be had in abundance in winter from old plants planted out, and trained against a wall in a warm, light house—indeed, that is the best plan to adopt, if the flowers are wanted in quantity. The plants should be pruned well back about the end of August, or a little earlier or later, according to the time the flowers are required. The syringe should be used freely, to induce a free and vigorous break; but when once the shoots have fairly broken into growth less syringing will be required, as this, as autumn approaches, only tends to promote weak growth. After a good break has been secured, the size and number of the trusses of flowers will be in proportion to the direct light that reaches the plants, accompanied, as it should be, by a corresponding amount of heat. These are the two prime factors in the production of Heliotrope flowers in winter, and should always bear some relation to each other in forcing.

E. HOBDAV.

FRUIT AND FLOWER CULTURE COMBINED.

In order to keep up a good supply of flowers all the year round, a cool stove or forcing house, in addition to the glass "A. B." mentions (p. 92), is indispensable, as without that it is impossible to bring on plants during the winter to render a greenhouse gay, or afford anything useful for cutting. With a good light house in two divisions, where different degrees of temperature can be maintained, much may be done, as in it Roses, Rhododendrons, Azaleas, Deutzias, Spiræas, Solomon's Seal, Lily of the Valley, and similar plants, may be forced in con-

stant succession, while, in the other end, Poinsettias, Euphorbias, Bouvardias, Eucharis, Gardenias, Begonias, such as *manicata*, *nitida*, *intermedia*, and numerous other winter-blooming stove plants, may be grown in pots, besides which part of the roof may be utilised for training, near the glass, in the sunniest and lightest part, *Bougainvillea speciosa*, that will yield any quantity of flowers for cutting. Room may likewise be found in the same way for *Stephanotis floribunda*, and, at the cooler end, *Bougainvillea glabra* to succeed its congener that comes in so early. Allamandas, too, succeed trained in the same way, the single blossoms of which look well placed in plates of green Moss, associated with *Gloxinias*, *Cactuses*, or any others of similar form and character. A large lean-to, with a high protecting wall, such as that of a building, to form the back, is the best form of house where economy is a consideration, as it requires less fuel to maintain a certain degree of heat than a span-roofed structure does, having such a breadth of glass exposed for the winds and weather to act on. A common mistake many make when erecting houses for such a purpose is in not putting piping enough in, which necessitates more fire being used than would otherwise be required, and therefore, although there may be an apparent saving at the commencement, it becomes much more expensive in the end by annually increasing the coal bill. A boiler worked at half power is much cheaper than one that has to be driven hard to do its work, and if the requisite temperature can be maintained without overheating the water the atmosphere is always far more congenial and healthier for plants. As "A. B." has her Peach trees trained to the back wall, the front of the houses would be far more serviceable with raised trellises, on which might be placed the whole of the bedding material or anything requiring to be kept cool and airy, such, for instance, as Heaths and *Epacris*, or other hard-wooded plants of that character, any of which would likewise do well in the house "A. B." mentions as having a tank in it, and which causes it to be too damp for *Pelargoniums*. Such an atmosphere would be just the thing for *Cinerarias*, shrubby *Calceolarias*, *Libonia floribunda*, *Coronillas*, *Cytissus*, and such like that like moisture in the air, and which only thrive really well when they can be so accommodated. The Vineries may with advantage be utilised for growing zonal and other *Pelargoniums*, forwarding *Fuchsias*, *Roses*, early *Rhododendrons*, and anything else not subject to thrips or red spider, as these are the only insects to fear that attack Vines, for black and green fly can be readily destroyed. A greenhouse to be full of flower at this dull season of the year should be kept regularly at from 50° to 55°, and in this temperature almost everything except tender stove plants will stand and flower profusely. It may be some help to "A. B." and others if I state what we now have in such a structure that looks fairly gay considering the bad weather. Most notable are the *Camellias*, which, owing to the regular warmth we have maintained for years past, have got into an early blooming habit, and now form an imposing background for the miscellaneous plants staged in front. These consist of forced *Callas*, *Rhododendrons*, *Azaleas*, *Salvias*, *Eupatoriums*, *Ageratum mexicanum*, *Perpetual Carnations*, *Cytissus*, *Coronilla glauca*, *Schizostylis*, *Cinerarias*, *Cyclamens*, *Primulas*, *Hebeclinium inthanum*, *Linum trigynum*, *Sericographis Ghiesbreghtiana*, *Schizanthus papilionaceus*, *Solanums* of the different berry-bearing kinds, *Chrysanthemum frutescens*, *Double Prunesses*, and *Lilacs*. Interspersed amongst these are several fine-foliaged plants, the principal of which are *Hedychiums*, *Palms*, *Grevillea robusta*, and *Coprosma Baueriana*, with *Dracæna australis* and the New Zealand Flax. So good and showy are the *Linums* and *Sericographis*, that I would strongly recommend them to be grown by all who have to keep a house gay during the winter, and if a temperature anywhere above 50° is maintained, they will be found to be just at home and to expand their gay blossoms in the greatest profusion. Other most useful winter-flowering plants are *Libonia floribunda* and *L. penrhosiensis*, the latter especially; it forms dense, neat little bushes, quite covered with bloom, that continues coming on for a long time in succession. For lasting from the present season up till May, *Hebeclinium inthanum* is most valuable, and, although considered a stove plant, it does remarkably well in a warm greenhouse. In appearance, except as regards

the foliage, which is large and stout, it resembles the well-known *Ageratum mexicanum*, but has larger heads of flowers of a better colour, and, as these are borne at the apex of every shoot, well-grown specimens of it are objects of great beauty. *Salvia splendens* and *Heeri*, too, are quite indispensable where a little bright colour is desired, and, by growing the two, either one or the other may be had in flower from November till quite late in the spring. S. D.

—“A. B.’s” question (p. 69) is an off-recurring one. By skillful management and much attention “A. B.,” with her several houses, might manage to keep up a supply of flowers including cool Orchids for the house and conservatory, “all the year round,” and at the same time secure crops of fruit; but with the means at her disposal, and perhaps a little more glass added, which she is willing to do, she would do much better to separate the fruit and flowers as much as possible, and let each have their own treatment. Of course she could use her fruit houses for plants, especially bedding material, at those seasons when the temperature suited them. She will find that by this plan she will have both finer flowers and better fruit and more of both. She would first have to consider the wants of her establishment in each case, and arrange her houses accordingly; perhaps she might find it advisable to sub-divide some of them to suit different subjects at different times, and give and take both ways, and, above all, she should not attempt more than she can accomplish with the means at command. Such an arrangement she will find the best in the end, and it will afford no excuse for failure. I could give instances in which this plan had been adopted after many years’ trial on the “compromising system,” and the result was a greatly increased supply of everything without adding more glass. It is difficult to advise in such cases without seeing the place and learning particulars; but in “A. B.’s” case the fruit houses seem to be rather out of proportion to the plant houses, considering the supply required, and she might probably find it wise to detach part of her Vineries for plant culture, instead of using all for both purposes. She will not be able to keep up a supply of flowers all the year round without two plant houses, or one divided into two—a warm and cool division—according to the subjects which she grows; and these she will find it needful to supplement with some of her hot and cold frames, which she says are numerous. In short, “A. B.’s” wants are successional structures, however small, in which she can forward supplies as she wants them, and this question she should be able to solve better than anybody else, if she has a clear idea as to what specialities she wants and when she wants them, together with a little knowledge of the treatment required by each. Of course she will be able to grow a great many little extras in all her houses besides special subjects. J. S. W.

MR. BAINES ON BOTTOM HEAT.

WHATEVER Mr. Baines says on the subject of plant culture deserves attention; therefore I hope no apology is necessary as regards noticing a rather remarkable and prominent article of his in a contemporary very recently, more especially as it has a direct bearing on much that Mr. Baines has written in *THE GARDEN* lately on this subject:—

“Vegetable life,” he says, “goes to rest through the reduction in the temperature, even in climates that know no winter in the sense that we experience it. During this time the heat of the earth in which the roots are placed becomes gradually reduced, and reaches its lowest point when the mean day and night temperature of the air is at the lowest, after which it must of necessity begin to rise with the sun’s returning power. The earth absorbs heat slowly, through the greater or less amount of stagnant air in its upper surface, its warming powers being still further retarded by the natural disinclination of heat to descend, consequently it does not regain the heat it has lost during the period of the lowering temperature of the air nearly so quickly as the air is warmed by the sun’s increasing force; therefore, the aboveground parts of plants—that is, their stems, branches, buds, and leaves—are placed under the growth-extending influence of heat continually in advance and excess of the roots until the turning period has arrived in the hot season, when the force of the sun begins to wane, after which the conditions are reversed, by the earth being warmer than the air, until the lowest point of the

air temperature is again reached. I would here recommend those who look upon bottom heat in the measure now usually applied as all but indispensable to the successful cultivation of plants from hot countries to consider this fact, and I think they cannot fail to see that applying it as is ordinarily done—at the commencement of the growing season, in a volume equal to, or often considerably above that in which the heads of the plants are placed—is diametrically opposed to the conditions under which they are found in a state of Nature, where the earth heat is in excess of that of the air only at the time that the season’s growth is being matured.”

The hypothesis here broached, it may be perceived, will adapt itself to a good deal that Mr. Baines has written lately on practical subjects; but, unfortunately, it is about as incorrect and misleading as anything can well be. Any superstructure which he may raise on such a foundation must necessarily tumble to pieces, and, what is more, the journal which now gives his opinions such prominence has, since the days of Lindley, been a consistent opponent of the same, as might, I think, be proved by numerous references. We are not without evidence on the subject treated by Mr. Baines, and I refer your readers to the tables, showing the comparative temperatures of the earth and air collected by Lindley in his “Theory and Practice of Horticulture,” and which are, I believe, the best, if not the only, tables existing on the subject extant, and they all prove the statements of Mr. Baines to be quite imaginary, so far as any deductions can be made with regard to the culture of plants. I need only quote the Chiswick tables of temperatures, since Mr. Baines speaks more particularly of climates like our own, because they tell the same tale as the other tables. The Chiswick records of the average temperatures of the earth and air, extending over a period of ten years, show that for seven months in the year the earth 2 ft. below the surface is warmer than the air, sometimes as much as 3° 84, and only during two months less than 1°. The months during which the air is warmer than the earth are April, May, June, July, and August, and the mean difference between the earth and air during these months is less than 1°. The greatest difference in any one month is 1° 21, and the least for the same period 0° 21. This represents the “excess” dwelt on so emphatically by Mr. Baines, and the slender basis of fact for the statement that the earth “does not regain the heat it has lost nearly so quickly as the air is warmed by the sun’s increasing force,” and so far as his assertions relate to hot countries they have no basis at all. The difference is so inappreciably small that no cultivator would think of taking it into account for a moment in practice. Within the tropics—those “hot countries” to which Mr. Baines tells us his remarks have a special application—in both high and low situations, temperate and warm, the earth is warmer than the air by a good many degrees all the year round. It would almost appear from the evidence that as we go farther south, till the tropics are reached, the earth gets warmer and warmer till it remains permanently at a higher temperature than the air. The conclusion arrived at by Lindley from this, and much more evidence of a similar kind, is as follows, to give his own words: “hence it may be considered an axiom in horticulture that all plants require the soil, as well as the atmosphere in which they grow, to correspond with that of the countries of which they are natives. It has also been already shown that the mean temperature of the soil should be above that of the atmosphere.”

Wortley.

J. SIMPSON

A FEW GOOD CONSERVATORY PLANTS.

THOSE who have conservatories which they wish to keep furnished with handsome flowers and foliage at all seasons of the year should pay particular attention to the selection of the fine-foliaged plants which they employ, as, being of a more permanent character than flowering plants that are introduced according to the season, the effect produced greatly depends upon them. In speaking of a conservatory, I mean one in which an intermediate temperature is maintained, or, at least, sufficient artificial heat during winter to dispel damp and maintain a light, buoyant atmosphere—say from 45° to 55°—in which plants from widely different latitudes will winter safely together. When the building is large and lofty, permanent plants in beds attain finer proportions and make altogether better central plants than those in pots or tubs. *Araucaria excelsa*, where it has room to extend, forms a beautiful specimen; Tree Ferns, such as *Dicksonia antarctica*, with

very tall stems, also look well, associated with Oranges, Lemons, Camellias, and similar plants. For large specimens in pots or tubs the following plants will be found well suited, having always a good appearance and being easily grown, viz, the New Zealand Flax and its variegated variety, plants that only need the shelter of a glass roof in the coldest parts of England; *Aralia Sieboldii*, which stands ordinary winters without any protection; *Dracaena indivisa*, a graceful growing plant; *Latania borbonica*, *Chamaerops humilis* and *Corypha australis*, all indispensable for cool house decoration; *Hedychium Gardnerianum* and *H. coronarium*, both evergreen fine-foliated plants; that flower in summer. To these may be added *Ficus elastica* and *Monstera deliciosa*, both effective plants where space can be afforded for their full development. Amongst variegated plants the *Yucca aloifolia* variegata, *Eurya latifolia* variegata, *Solanum hybridum* argentea, *Aspidistra lurida* variegata, *Ligustrum ovalifolium* variegatum, *Bambusa Fortunei* variegatum, *Agapanthus umbellatus* variegatus, and *Coprosma Baueriana* variegata, are all excellent in their way, and the last makes a good trailing edging plant. These are all easily cultivated, and moveable plants may be added to them so as to produce variations to any extent. Foremost amongst flowering plants stands the Camellia, which, in addition to brilliant flowers, has foliage which at all seasons, when in a healthy state, is very attractive. Where convenience exists, Camellias should always be planted out in good, rich loam, and well supplied with soft rain water. Amongst other flowering plants, Heaths, Epacris, Acacias, Daphnes, Azaleas, *Coronilla glauca*, and *Chorozemas*, all flourish, with ordinary care, in pots. Amongst old-fashioned plants now seldom met with in conservatories I find *Sparmannia africana* to flower freely even in the middle of winter. Climbers should form an interesting feature in conservatories, and only evergreen species should be used if winter effects be sought for. Flowering plants of a soft-wooded character, brought forward elsewhere, should be added according to the season. J. GROOM.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

***Myrsiphyllum asparagoides*.**—I have had this plant here in an unheated greenhouse for two seasons, and it is now as healthy and fresh as could be desired. During the autumn and winter months I find it to be most useful; it is easily cultivated, and is unique as a winter window plant, even in a small state. In summer it requires rest.—CHAS. McDONALD, *Garden House, Stokesley*.

***Hedychium* as Fine-foliated Plants.**—Although *Hedychiums* are beautiful-flowering plants, they are equally serviceable as fine-foliated plants, and for the decoration of large conservatories they are invaluable, as, under liberal culture, their stems attain a considerable height. They are plants of easy culture, growing freely in any ordinarily good soil, and they will withstand a wide range of temperature. A conservatory or intermediate house suits them admirably, and in winter a good stock of such plants is very useful where indoor plant decoration is carried on, as they are even more effective than many of the costly occupants of stove houses, which cannot readily be moved about in a season like the present without considerable danger of injury from exposure.—J. GROOM.

***Jasminum hirsutum*.**—This is one of the best of stove climbers at this season, producing, as it does, large clusters of pure white, sweet-scented flowers. Here it is planted out against the south end of a span-roofed stove, as, being somewhat rigid in growth, it is not so well adapted for rafters. The first flowers are borne at the extremities of the shoots, and afterwards from the lateral branches for a very long period; in fact, a large, vigorous plant of it is rarely destitute of flowers. The most suitable soil in which to grow it is about equal portions of peat and loam with sand enough to keep the whole porous.—A. HOSSACK, *Ragley, Alcester*.

Large Shifts Best for *Kennedya coccinea*.—This pretty greenhouse climber, when well grown so as to thoroughly cover a good-sized trellis, is very attractive, and makes an effective contrast with other flowering plants with which it may be associated. In order to form a specimen quickly and to induce the formation of flowering wood it must be treated somewhat differently from the ordinary run of greenhouse plants. It should never be in want of an abundant supply of nourishment from the time when it starts into growth until it ripens its wood. If shifted on in the ordinary way it is apt to get pot-bound, and, when once that occurs, it never regains its normal vigour. A healthy, well-rooted plant, in a 4-in. pot, should be placed at once in a 10-in. pot, affixing the trellis thereto at the time of shifting. The compost should consist of turfy loam and peat mixed freely with sand, and a sprinkling of pieces of porous brick will help very much to maintain the soil in an open condition.—J. C. BYFLEET.

THE FLOWER GARDEN.

ASPHODELUS RAMOSUS IN THE WILD GARDEN.

This vigorous and somewhat coarse herbaceous plant is typical of the great number of plants, to provide a fitting place for the growth of which was one of the objects which the writer had in view while writing the "Wild Garden." There is a host of vigorous herbaceous plants, which, while attractive during their short season of bloom, are so very much in the way during the rest of the year that few people think them worthy of room in their borders. Moreover, such plants are frequently, from their habit, far from being agreeable objects stiffly tied up in borders, while, allowed to form groups in copses, or woods, or rough shrubberies, they are delightful. Among those who have taken up the notion of the wild garden with much spirit, and illustrated it with great intelligence, is Mr. George Berry, forester at Longleat. He has already secured near many of the drives through the noble woods and outergrounds of Longleat some of the most charming effects we have ever seen in gardens, and in the face of the usual and relentless enemy of the wild garden—rabbits—which destroy so many of the best plants for it. The annexed is an illustration of one of the plants which he has established, sketched in the wild garden at Longleat by Mr. Alfred Parsons, and engraved by Mr. Hyde. The work of a forester in such a place as Longleat is no light task, and involves much attention to new and rare species of trees and shrubs and their propagation. To take up, in addition, the extensive flora of the wild garden, and make, in a very short time, such a judicious use of it, is deserving of grateful record on my part. The woodland drives of England, treated in the same intelligent way, would form lovelier gardens than were ever imagined, and in their presence the crude floral geometry of the present day would not get more attention than it deserves. W. R.

CARPETING BULB BEDS.

For the earlier blooming bulbs, such as *Scillas*, *Snowdrops*, *Crocuses*, &c., the Mossy Sedums make excellent carpet plants, as not only are they complete coverers of the soil, but, being shallow rooters and exceedingly dwarf, they permit the flowers of these bulbs to be seen in full beauty above them. The prettiest arrangement in this way that I have yet seen as a permanent border where nothing else would grow, was a carpeting of *Sedum Lydium* and *Snowdrops*. The varieties of the Mossy Saxifrages have growth of such similar character, that any of them would do for *Talips*, *Gladioli*, and *Lilies*, but these are undoubtedly grosser feeders than the Sedums and would, no doubt, soon impoverish the soil. The chief portion of the Saxifrages have white blooms, but a few have red and pink flowers. If these be desired as a contrast to the colours of the bulb flowers, it would be necessary to select plants that would flower simultaneously, and this might be a matter of difficulty as *Talips* are early and *Gladioli* and *Lilies* late. The Golden-leaved Chickweed, the *Veronica* repens, the dwarf *Pennyroyal*, and others of similar growth, all make good carpet plants of a permanent character, needing now and then a little trimming and attention. The early spring bulbs do so well in many old gardens upon Grass that it may be doubted whether there can be found many better or more enduring carpet plants than the Grassy covering of our lawns. Beds of bulbs might be planted here and there and be protected from the scythe and machine by wire guards until after they had bloomed and the foliage had died off; then the guards might be removed and the bed mown and thrown into the lawn. *Crocuses* and *Snowdrops* thus treated have thriven and done well for generations. It is questionable whether the best *Gladioli* would do as well as permanent plants for such a purpose, they are so exceedingly apt to become smaller by degrees and beautifully less. The *Gladioli* *psittacinus* section are the best permanent border kinds, and these will, in good soil, grow into large bunches like the *Tritomas* and *Schizostylis*, but of course they have not perennial foliage. *Gladioli* and *Lilies* would, no doubt, thrive best amongst dwarf-growing shrubs where manure could be given, and the soil and bulbs could be renovated as needed. When the tall spikes and heads of bloom of these bulbs are seen projecting just above a dense growth of foliage, they look far more pleasing and picturesque than would be the case if the soil were simply carpeted with one carpet plant. For all general carpet purposes I prefer the Sedums. A. D.

***Tropæolum speciosum*.**—In order to insure success with this fine scarlet-flowered climber, it should be well established in pots

before it is planted out, and during growth water should be freely supplied. It succeeds best in well-drained rich soil.—D.

ALPINE PASSES AND ALPINE FLOWERS.

ONE of the great delights of Swiss travelling, one of the pleasures which draw people, year after year, to the land of snow and alp, is the never ending interest which Alpine flowers afford. People sometimes wonder how I can set off alone for a long day's ramble, over a pass or up a mountain side, with no baggage but my knapsack and no companion but my "stock," but such people know nothing of Alpine flowers and of the deep, pure pleasure which they give. Loneliness with them is out of the question and cannot exist, and when I walk afterwards round my rock garden at home, and see the plants which I gathered growing there, often as perfect as in their native haunts, the walk and the scramble come back to my mind, and I take my walk over again. In this old-fashioned winter, when our garden treasures are still buried in snow, an account of one of these walks may not be uninteresting. On the 27th of August last I left the bustle of the Steinbok Hotel at Chur, and the crowd of tourists, struggling for places in the dusty diligences, and started for a three day's tour over the Strela, Sertig, and Albula Passes, on my way to the Engadine. As I send the plants which I collect to England by post, I always carry with me a few small cardboard boxes, such as jewellers use, with a piece of oilskin inside each, in my pocket. Many a box of this sort, filled with precious roots, the result of my wanderings, have I sent off, and they have never failed to reach England in safety, with the plants in good order. Before posting them I put a little wet Moss inside, which the oilskin keeps moist, and I write the address on an ordinary label, with the word "plants" on it—and put the stamp on the label—to keep the box from being smashed. On the day in question, thus equipped, I started from Chur, by a sort of omnibus which carried the mail bags, at five in the morning, to Langwies, whence a bridle track alone leads up to the foot of the Strela Pass to Davos. On the way, in addition to the glorious views which the Schanfigg Thal affords, I noticed, from the carriage windows, many interesting plants, and the four hours thus spent, toiling slowly up the valley, passed pleasantly enough. There were two kinds of *Lithospermum*, one with small blue flowers and bushy growth which I had not seen before, several sorts of Mullein, and a bright growth of *Teucrium* and *Calamintha* and other commoner flowers. At Langwies, after breakfasting at the clean little hotel on excellent brown bread and coffee, I began my walk. At first the path lay through the usual Fir woods, with the Plessur rushing down on the right, and numerous tufts of *Bupththalmum salicifolium*, with its bright yellow blossoms, scattered around, until I reached the Schnitten and Hapten Alps beyond, where the final ascent commences. From hence to the summit the path rises in tolerably well-defined zigzags over stones and grassy slopes abounding with flowers. At the foot of the Pass *Saxifraga cæsia* was particularly abundant, and finer than I ever saw it before; some of the patches were nearly 6 in. in diameter, and the flowers, of unusual size, were borne on stalks 5 in. or 6 in. in length. There was a white variety of *Campanula linifolia*, which was especially beautiful, and, as I neared the top, I came on tufts of *Gentiana bavarica*, and more than one species of *Androsace*. At the summit, 7,799 feet high, lay a considerable patch of snow, and a flock of long-eared Bergamasque sheep, attended by a couple of shepherds, were lying on it, as

a sort of protection from the heat, their black and cream-coloured coats contrasting well with the white glitter of the snow. The descent to Davos was easy, and with the exception of more patches of *Saxifraga cæsia*, as luxuriant as those at the foot of the pass, and here and there a root of *Viola calcarata*, I saw nothing remarkable among the many Alpine flowers I met with.

The next day, after a pleasant rest at Davos am Platz, I set off, a little after seven, for Bergün by the Sertig pass. A well-defined path led for some distance by the side of a torrent, through the wooded Sertigthal, to Dörfli, and then up the Kihlphthal to the head of the pass. As the latter name denotes, herds of cows were feeding at intervals in the valley as far as the alp extended. Up to this point I met with many good flowers, such as *Potentilla ambigua*, *Gentiana excisa*, and *Phyteuma hemisphericum*; above it the path ceased, and I lost some valuable time, which should have been spent in collecting, in trying to make it out. One of the first rarities I met with was *Primula Candolleana* growing in low fissures of rock right in the bed of a stream, and partially covered with water; with it I found the round-headed cotton grass, *Eriophorum Scheuchzeri*,

then, as I ascended the pass I came on *Senecio abrotanifolius* in splendid bloom, *Achillea nana* and *Hieracium albidum*, a plant which always pleases me with its fragrant scent and large straw-coloured flowers, and which I am always surprised at not finding in the published lists at home. Its leaves and stem are sticky, like the sweet *Salvia glutinosa*. Higher up, *Soldanella minima* reared its beautiful fringed bell among patches of blue *Gentians* (*verna* and *bavarica*) and the pink Alpine *Treffoil*. Still higher appeared *Ranunculus rutefolius* and *montanus*, and, highest of all, the red and white varieties of *Ranunculus glacialis*—a plant which, unfortunately, can never be seen in perfection away from its native haunts—and, loveliest of Alpine gems, *Androsace carnea* and *ciliata*. At some distance before reaching the top of the pass, vegetation ceased, and nothing could be seen but a confused mass of stones and boulders with patches of snow at intervals, and nothing heard except the occasional cry of some wild bird and the warning whistle of the marmot. From the summit, 9062 ft. above the sea level, a glorious view of Piz Ketch and the Porchabella glacier presented itself, while just below glittered the clear green waters

of the Raveisch lakes. By the side of these lakes, bearing to the right, over Alps laden with flowers, amongst which I gathered *Pedicularis tuberosa* and *Nigritella angustifolia*, my path lay, and before long I reached the head of the Val Tuors, and descended in safety to Bergün on the Albula Pass. One word in praise of this beautiful Swiss village. Travellers are in the habit of rushing through it, either by diligence or carriage, as quickly as they can, anxious to find quarters in the hotels of St. Moritz or Pontresina, but if they could only be induced to stay here a day or two and explore the adjacent country, they would not repent it, for the walks around are beautiful. As I sat in the balcony of the Piz Aela Hotel, in the centre of the village, watching the setting sun, a storm came sweeping up the valley from the south, and as peak after peak became shrouded, and others stood out in bold relief against the black bank of clouds, the most beautiful effects were produced, and I was confirmed in my opinion that Bergün, with its picturesque houses and quiet people, and, above all, its magnificent mountain view, is without doubt, one of the loveliest spots to be found in al Switzerland.

F. M. BURTON.

Highfield, Gainsborough.



Asphodelus ramosus in the Wild Garden.

SUB-TROPICAL GARDEN PLANTS.

AMONGST the many plants brought into notice of late years, far too large a portion are of but little value to the cultivator as regards making pleasing effects in glass houses during the winter. I will therefore point out how this defect may be remedied by making selections for the sub-tropical garden. The *Aralias* form a fine class, but of these, with the exception of A. Sieboldi, A. S. variegata, and A. papyrifera, one sees but few representatives. *Aralia umbraculifera*, when well grown, makes a good isolated specimen, so does, also, A. trifoliata. These are both greenhouse kinds, and when taken up, at the approach of frost and carefully potted or tubbed, they are effective subjects for rooms or staircases, or conservatories. They may be increased without much difficulty from cuttings; but, perhaps, the quickest mode of propagation is either root-grafting on A. papyrifera, which roots like a Willow, or else striking the latter from pieces of the root, allowing the plants to grow for a season, and grafting them above ground. *Aralia spinosa* is a handsome, hardy species, which makes a fine group or single specimen; it may be increased by means of root cuttings taken off in the autumn and struck without heat. The *Gastonias* allied to the *Aralias* are equally useful subjects, and require the same culture as the greenhouse *Aralias*. The red-leaved *Dracenas* are not so suitable for planting out as the green-leaved sorts, as they seem to suffer much more from wind and sun, and soon get a dilapidated appearance. *D. braziliensis*, with broad, handsome, bold green foliage, is a plant of robust constitution, which cannot be said of the red-leaved kinds. *D. congesta* and *D. rubro-marginata*, both graceful sorts when tall, blend effectively with the larger forms of vegetation in garden landscapes. *Pandanus utilis* is a grand subject, but it is better not to plant it out, but merely to sink the pot or tub below the surface of the lawn. *Ficus imperialis* and *F. Leichtensteini* are easily managed warm house plants, which make fine specimens if planted out in good ground. They lift well, and, if kept close for a few weeks, make useful subjects later in the year. The *Metrosideros* is not nearly so much cultivated as it was fifty years ago; *M. albicans* is handsome both in flower and foliage; *M. coccinea* and *M. alba* flower profusely during the summer, and in winter too; they have all the peculiar bottlebrush character of blossom to be found in so many New Holland plants. They make striking plants on Grass plots in sunny situations, and may be planted out in a mixture of sandy loam and peat. *Cineraria platanifolia* is effective, although somewhat coarse in foliage; it should, therefore, be planted at some considerable distance from the eye. It produces enormous panicles of yellow flowers in January and February.

The different sorts of *Amorphophallus* make pretty objects if five or six be planted somewhat closely together; singly, they might be considered too stiff and fungus-like; *Philodendron lacerum*, *P. pertusum*, *P. cordifolium*, in warm nooks have quite a tropical appearance; they look well creeping on the ground, or clambering on large trees. In Southern England they may be planted out, or may be grown in pots, but if they have much nourishment they become far too rampant in places where the accommodation is limited; like most half epiphytal subjects the *Philodendron* is easily increased; *Tradescantia discolor* makes a peculiar but telling border to a bed of fine-foliaged plants. All the *Alcasias* and *Calocasias*, such as *odora*, *nymphæfolia*, *violacea*, and *gigantea*, are beautiful objects in shady or half-shady quarters; they require rich, friable soil and plenty of water. The *Habrothamnus* and *Cestrum*s, such as *H. fasciculatus* and *C. aurantiacum*, make graceful objects either planted out or in tubs. These plants were once very common, but they have succumbed to the fashion of the day. *Curculigo recurvata* and *C. recurvata variegata* may be made of much use in single groups, or mixed with other tropical subjects. That grand tree *Paulownia imperialis* may be also made to do duty in a more humble way in the sub-tropical garden. Propagated from ripe wood, precisely as in the case of Vines, one can have plants 3 ft. or 4 ft. in height the first season, and in the following year they will be, if thinned out when standing too thickly, from 8 ft. to 10 ft. high, and will be covered with fine foliage. In order to obtain perfectly ripened wood of a *Paulownia*, a specimen may be planted in a chink of the greenhouse floor, and trained as a roof or wall creeper. It

will make but little growth, but the wood for propagating purposes will be far superior to that from trees out-of-doors. *Kölreuteria paniculata*, *Amorpha fruticosa*, and *A. nana*, when cut down to a stool, annually produce a quantity of beautiful feathery foliage. In making use of all or any of the above-named plants, the cultivator will be guided but little by the prevailing mode of ribbon border, or bedding arrangements; on the contrary, he must use his skill and taste as a garden artist in forming those pleasing combinations of light and shade, form and colour that give in a well-finished picture a lasting and pleasant impression.

Moravia.

SYLVESTRIS.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Salvia splendens.—Now that the period of flowering is about over with this plant, I should like to impress upon those who have a good stock of it, and usually consign them to the rubbish heap, the desirability of keeping them till all danger of frost is over, and then planting them out either in groups or mixed beds for an autumn display. Treated in this way, the effect produced by them is quite striking. We had a mixed bed of these and *Chrysanthemum frutescens* last year which was much admired, the bold masses of the scarlet *Salvia* being toned down by its more delicate neighbour the *Chrysanthemum*. *Fuchsias* of different colours may be used for bordering the bed.—A. HOSSACK, Ragley, Alcester.

Stobæa purpurea.—I am pleased to learn, on such good authority, that this plant is fully entitled to be designated hardy, and that, in some parts of the kingdom at least, it requires no more attention than hardy herbaceous plants generally. Nevertheless, I think I was justified in recommending a little caution in dealing with a comparatively untried plant. I had been assured that it was hardy in a certain place, and I did not doubt it; but remembering the comparative mildness of recent winters, I would not say that it was hardy. Possibly it may prove as hardy in all soils and situations as *Koiphoia Uvaria*, a well-known South African plant. This winter will try the constitutions of many so-called hardy plants. Many plants that are perfectly hardy on the south and west coasts succumb to the cold and wet of ordinary winters a few miles inland, and the nature, as well as the condition as to moisture, of the soil is an important factor. Mr. Elacombe, in a recent number of THE GARDEN, suggests that persons sending lists of their losses or gains should give their addresses, and I would further suggest that they add a few words respecting soil, subsoil, situation, and aspect; then their record will have a real and permanent value. I am not of the opinion that we should plant nothing except perfectly hardy subjects, but it is of great importance to know their degree of hardiness in different localities and situations, and under diverse conditions. We have not, for instance I believe any evidence respecting the hardiness of *Stobæa purpurea* in the midland and northern counties.—W. B. HEMSLY.

Signs of Spring.—These are, as yet, not very evident out-of-doors, but within the hardy plant house the crowns of *Primroses* are awakening and pushing up leaves, and the trusses of bloom already show tinges of colour. *P. denticulata* and *P. purpurea*, almost the earliest and most pleasing of all for the house, will soon be in bloom, and how beautiful they are! *P. farinosa* is producing mealy foliage white and pretty; *P. nivalis* will shortly display its pure white trusses of flower, and *P. intermedia* those of rich, deep red. *Auriculas* have passed through the dormant stage; the pale yellow leaves have been pulled away, the surface of the soil has been neatly dressed, and the crowns are now expanding their youthful leafage. Polyanthus of the self and fancy-coloured kinds are pushing up bloom; so, also, are the Snowdrops, Squills, and Cloth of Gold Crocus; whilst many-hued *Hepaticas* are bursting their crowns, and exposing a trace of pretty tints within; on the trellis and walls Tea Roses are pushing their buds, whilst outdoors they look as if withered up. *Maréchal Niel*, ever the earliest, as it is the best, of all evergreen Roses, is making new shoots, and a few days of sunshine will greatly encourage them; indeed, there is scarcely a plant in the hardy house that does not show that the shortest day is passed, and that "the winter of our discontent" will soon be over. How much better to have all these in a house needing no heat, than to see a house, supposed to be frost proof, full of tender plants half dead and frost bitten.—A. D.

Sweet Peas.—Flowers of these are always valuable in an out state in summer, and, where they are required at that season, now is a good time to sow the seed. A moist situation and a deep soil should be chosen for them; they will then bloom in profusion for months in succession.—S.

PLANT CULTURE FOR MARKET.

PRIMULAS.—The red and white kinds of the Chinese Primrose are grown in thousands by London florists. Some grow them for sale in the shape of plants; others for the sake of their seed, which, if it come from a good "strain," is valuable. The practice adopted by the best growers is as follows: Three sowings are made; one early in March, a second at the end of April, and a third towards the end of May. Seed sown in March produces blooming plants in October and November; that sown later at Christmas and onwards. The seed is sown in shallow boxes, which are better than pans, as they do not absorb the moisture round the edges. It is sown on well-rotted manure, previously well moistened, and then slightly covered with silver sand. A piece of brown paper is placed on the surface of the box, which is never allowed to get dry until the seed has germinated, after which it is removed. The boxes are placed in a warm temperature and in a shady position. When the plants are large enough to handle, they are pricked off four or five together into a 4-in. pot, and, when they have made good roots, they are potted singly in 5-in. and 6-in. pots. Whilst growing, they are kept rather close and are sprinkled overhead several times a day in bright weather. Discrimination in watering is necessary, as, by using too much or too little, serious injury is the result. If the plants show blooms early in the autumn the latter are picked off, so as to give strength to the plants. The best situation for Primulas whilst they are growing is a north house or frame, where plenty of light but not much sun can reach them. When the roots are pot-bound, a little weak manure water is given them and no more fire-heat is applied than is sufficient to keep out damp. Plenty of air night and day when the weather is favourable is given in order to render the plants dwarf and stocky. The soil used for Primulas is well-rotted leaf-mould or cow manure mixed with equal parts of mellow loam and a little silver sand. Good drainage is always necessary, and, under the above treatment, fine bushy plants, bearing large heads of snowy-white or rich rosy-red blossoms are produced. When grown for seed, all the weak blooms are picked off, leaving those only which appear to be likely to produce plump seed-pods. The plants are arranged on large stages in lean-to houses, each colour being kept in houses at a distance apart, in order to prevent cross-breeding, which would spoil the "strain." Great attention is paid to watering and ventilating after the plants have formed their seed-pods, and during very hot sunshine a little shade is afforded them.

The double white *Primula* is grown chiefly for the sake of its blossoms, plants of it being in little demand, and, moreover, they are too difficult to grow so as to be sold at reasonable prices. There have been many new kinds raised, but the old form is still found to be the best for winter; its blooms are used largely both in button-hole and ball-room bouquets. The most successful grower of double Primulas with whom I am acquainted is Mr. Reeves, of Acton, who has a large house wholly devoted to their culture. It is span-roofed, with a path through its centre and a 6 ft. bed on each side. On these beds are arranged upwards of 3000 plants in 6-in. pots. The plants on one side of the house are always in bloom, while those on the other side are coming on to succeed them. When one side ceases blooming, the plants are cut down, cuttings are put in, and most of the old roots are thrown away; then, by the time the other side of the house has done blooming, these cuttings are sufficiently advanced to keep

up the succession, and this goes on year after year; indeed, visit this *Primula* house when one will, one side of it is always a sheet of snowy-white blossoms. Double white *Primula* flowers fetch from 12s. to 20s. per dozen bunches, and plants realise from 10s. to 20s. per dozen, but cut flowers are by far the most remunerative. The soil principally used for double white Primulas is fibrous sandy loam without any manure whatever, as, when the latter is used, the growth made is vigorous but soft; the crowns do not get well ripened, consequently they are liable to damp off in winter. A dry, airy atmosphere and careful attention to watering are the chief points to be observed in their after culture.

CAPE HEATHS.—Probably as large quantities of Heaths are disposed of about London as of any other kind of plant. One grower alone sells yearly 200,000 plants, and I believe some grow even more than that number. The large houses devoted to Heath cuttings in some nurseries during winter are alone a sight worth going miles to see. Here, on stair-like stages, are thousands of 6-in. pots, each containing some fifty cuttings, covered with small bell-glasses. In sheds adjoining may be seen men making cuttings with pairs of scissors and others deftly inserting them in the pots, which are surfaced with finely-sifted silver sand; others, again, are watering and setting the pots in their places and putting on the bell-glasses, whilst others are removing such as are already rooted to make room for those that are newly inserted. More men may be seen out in the grounds busily nipping off the points of young plants which are growing on in cold pits for the next year's blooming, and so the production of young Heaths goes on from year to year. About Christmas time the markets are crammed with little bushy plants of the rosy-coloured *Erica gracilis* and the pearly, rose-tinted, waxy-blossomed *E. hiemalis*, two of the principal varieties grown for winter and spring blooming. These are succeeded by *E. Willmoreana* and *E. candidissima*, and after these come the beautiful *E. ventricosa* and the yellow *E. Cavendishi*. Cuttings of these *Ericas* are struck on a very slight bottom-heat during the winter months or as soon as cuttings of them can be obtained. When rooted, they are potted off, three in a 3-in. pot, and placed in light, airy situations, such as on shelves of houses or in lean-to pits close to the glass. During March they are shifted singly into 3-in. pots; and, when well-rooted, they are placed in cold pits and subjected to as much light, air, and sun as possible; in this state they remain throughout the summer, receiving abundance of water both overhead and at the roots. In the following winter they are cut back, and as soon as they again break into fresh growth they receive their final shift into 5-in. pots, extra large plants being potted in 6-in. ones. Pure peat and sand constitute the kind of soil used for them, and they appear to enjoy it, for Heaths may be seen in some nurseries growing as freely as scarlet *Pelargoniums*. Fire-heat is as much as possible at all times avoided, and in very severe weather mats, &c., are used to keep the plants at a proper temperature in preference to heat from hot-water pipes.

FUCHSIAS.—These are everybody's plants, and the market is seldom without them. In July fine plants laden with blossoms may be bought in the thoroughfares at 6d. each. One would think it could not pay to grow Fuchsias for the price which they fetch, but it is the quantity that pays, good plants, and well flowered, being turned out in three months from the time when the cuttings are put in. Some growers get their principal batch of plants into flower early in April, when they are the most valuable. They

are struck in autumn for spring blooming, and in spring for the summer and autumn supply. The cuttings are inserted thickly in 6-in. pots, and, when well rooted, are shifted singly into 3-in. pots; when again established, the shoots are cut back, so as to induce the plants to grow bushy, and when the pots which they occupy are filled with roots they receive their final shift into 5-in. or 6-in. pots. Each plant is supported by a central stake, to which the branches, when in bloom, are tied in such a manner as to form a perfect but by no means formal pyramid. Rose of Castile, Mrs. Marshall, and Arabella are the chief light-coloured kinds grown; the dark-coloured varieties are War Eagle, Wave of Life, Catherine Hayes, Souvenir de Chiswick, and other free-blooming sorts.

BALSAMS.—These are always abundant in London during summer and autumn, and, although they are sometimes hawked about the streets and sold at very low prices, they are, nevertheless, remunerative. Balsams are but a very short time on hand, for in three months or less good saleable plants can be obtained. The seed is sown in heat in spring in boxes or pans, and the seedlings are potted off and grown on in warm houses, plenty of manure water being given them at the roots, and copious syringings of clear water overhead to keep down red spider and to promote free growth. They are very impatient of drought, and to timely watering alone is due success in their culture. Some plant out their Balsams in an open border consisting of rich soil in June, and take them up and pot them just before flowering, but this is not a good practice. Market gardeners seldom aim at what may be termed novelties in Balsams, those sorts with a good habit and bright self-coloured flowers being generally preferred by them, and, although nothing very striking in the way of beautifully striped flowers is to be found amongst them, yet, if lovers of Balsams were to watch the plants so abundantly brought to Covent Garden during the summer and autumn, they would probably note the wonderful results in the way of both growth of plants and profusion of flowers obtained in 5-in. and 6-in. pots. The principal, or what may be termed the orthodox, colours to be found in market plants are wholly white and scarlet, or these two colours intermingled in spots and stripes.

C. W. S.

THE FROST AND VEGETABLES.

THE long-continued frosts have hit these harder than I ever remember. Until within the past fortnight, during which the severe frosts have called in the biting east wind to assist them in their work of destruction, vegetation seemed to have sustained little injury. There seems several causes for this. The frosts were severe, but the air was still. Vegetation was pretty well protected by snow. Hoar frost was also more developed, and continued longer than usual. All this helped plants in general and vegetables in particular, to pull through; but within the past fortnight the wind remained steadily in the east, and there have been several days when the atmosphere was driven against every living thing by a strong east wind, with a penetrating force that threatened to pierce even hearts of Oak, and a cold equal to ice and salt at their worst. These have literally killed thousands of vegetables and crippled all. Our plantations of old Cabbages, always left to provide any quantity of Coleworts in the spring, seem dead to a stalk. Brussels Sprouts, Savoy, and even Scotch Kale are severely crippled. All our Broccoli lies flat on the ground, as if trying to hug the remainder of the snow that protected it so well during the first stages of the frost now nearly two months ago; and even Leeks, that I have never seen browned before, look as if fire had passed over them. A visitor, from a distance more favoured, where the snow has disappeared, assured me that the frost seemed to have killed the Grass. The entire lawn was as brown as if it had been scorched up by drought at midsummer. This similarity of appearance and results from frost and sun or fire is familiar to cultivators. Our Grass continues covered, and so far safe; but the loss

and injury to the vegetables is a very serious matter, and this wonderful persistence of the cold is almost equally so. Most of the trees and shrubs yet seem safe, though how long they will continue so, with the wind fast in the east, and the snow lingering for a farther supply, no one can say. The winter has tried most severely even the largest Pampas Grasses, and killed all the smaller ones that were not protected. Tea Roses are also severely hit; Maréchal Niel looks as if it would hardly recover, and Safrano seems to have suffered almost as much. But it is quite premature to note the losses caused by the frost; this cannot be done till the thaw comes. Not a few plants that make no signs of distress while frozen die soon after they are thawed, and, on the other hand, those that shrink and shrivel the most under the cold grasp of the frost often suddenly and completely revive, with little or no permanent injury, on the return of genial weather. The sun, as if weary of looking out on a frozen world, and despairing of its power to chase away the cold, appears to have retired altogether, and left the leaden skies and the frost to do their worst in the garden. I never remember such a continuous and marked absence of sunshine. Being so long without sunshine, it is to be hoped it will not now return till after the thaw, for all experience proves that rapid thawing during bright sunshine often does as much or more injury to vegetation than severe freezing or long continuance in a frozen state.

D. T. FISHER.

TOBINS' SYSTEM OF VENTILATION.

THE subject of ventilating glasshouses is itself being again freely ventilated. As only a certain quantity of air can be confined in a given space, if it can be shown that outside air is undoubtedly introduced into a closed room or plant house, it follows that the air already confined must find for itself some means of egress. Ordinary ventilators are often erroneously opened with the idea of letting out hot or vitiated air, instead of which the pure and cold air rushes in through the aperture with the usual result of a draught, and the hot air finds its exit elsewhere. The same process takes place with the system I desire to advocate, but with the important exception of perfect freedom from draught. Fresh air can be introduced into houses without any perceptible draught by boring a round hole of about 2½ in. to 3 in. in diameter through the outside wall just above the ground line, and fixing in the house by means of a zinc neck, an upright tube of the same material and diameter and about 5 ft. high at least. Curiously the cold air confines itself to the shape of the tube until it strikes the ceiling or glass roof, and then imperceptibly disperses, and can be stopped at any moment by covering the inside orifice with a cap attached by a chain. I drew attention to this, ordinarily called Tobins' System, in your paper of April 8, 1876, without any apparent result, and conclude that prejudices prevented a trial, or that it has been tried and found wanting. If the system does not answer it would be an act of kindness for some of your ventilating authorities to say so, but if it has not been tried they will perhaps give it their attention, and then furnish us with their experience. Neither expense nor appearances can be any objection, because half-a-dozen tubes can be put up in out-of-the-way corners for a few shillings, and be taken away again if not liked. I find it a perfect remedy for the stuffiness of an ordinary sitting-room.

Uabridge.

J. L. OLIVER.

Potatoes Dormant.—I have rarely known Potatoes to be in such a dormant condition as they are now; except when kept in close, heated places, not a tuber has started into growth, and there is now no prospect that they will be unduly excited before planting time. This will be an undoubted gain as it is very difficult in mild seasons to keep sprouting in check. In the case of early Kidneys that are to be planted in pits or frames or in warm borders, it is well to subject the tubers to a gentle warmth, just enough to start the eyes, as then it can be seen that none are "blind." Where this is done the tubers should be kept in the light, and then the young shoots will be plump and strong. With tubers planted early in the open ground it is, no doubt, best that the growth there should be excited only in proportion as the soil becomes naturally warmer, and where this is the case the crop is not likely to be cut down by late frost. It will be unadvisable to plant too early this year, as the ground will be exceedingly cold for some time, let the weather be ever so favourable. For all main crop purposes the first and second weeks of April is early enough, and, indeed, in most soils any time during the month of April will do. There are a few new kinds put before the public this year, and, so far, only one new American, called Pride of Ontario, of which nothing at present is known. For general crop purposes, however, Snowflake and Early Rose remain the most popular of all the American sorts.—A. D.

NEW OR RARE PLANTS.

BOMAREA OLIGANTHA.

This plant was discovered by Mr. B. Roelz in the Peruvian Andes, and its seeds were imported and raised by me at Baden-Baden. When the first little bunch of two flowers appeared, I was anxious to have the plant named by competent authority; therefore I submitted it to Mr. Baker, of Kew, who pronounced it to be new, and named it *B. oligantha*. The specimens submitted to Mr. Baker were, however, taken from small plants cramped for root room, a fact of which Mr. Baker was not aware, and hence he gave it the not quite appropriate name which it now bears. One plant grown in a large pot, and another planted out, became fully developed, and have produced since July last a succession of blooms, with still some buds remaining to expand. During summer and autumn the flowers assume a much brighter hue than they now possess, the outer segments assuming a colour like that of *Papaver*



Bomarea oligantha.

bracteatum. It is of very easy cultivation, only requiring space in which to grow, and a soil consisting of peat, loam, and sand, intermixed with some rotten manure. The plant will now go to rest for a month or two, when it may be placed in a greenhouse in which a temperature of 36° Fahr. is maintained, or just enough to exclude frost. During the growing period it wants a good deal of water, and therefore, when grown in a large pot, it must be efficiently drained, taking care, however, not to use any sharp-edged crocks, because the *Bomareas*, before going to rest, form egg-shaped tubers on thin threads, which go down to the bottom of the pot, imbedding themselves in the crocks, and, consequently, are liable to get injured by sharp edges, an injury which may cause the decay of an entire plant.

Baden-Baden.

MAX LEICHTLIN.

Hamamelis arborea.—This may be added to Mr. Groom's list of shrubs (p. 84) which defy the present severe weather. Its starry yellow blossoms are very bright and pretty just now, and they seem quite indifferent to the biting east wind which keeps back even

the Snowdrop and winter Aconite. I had my little tree from Messrs. Rodger, McClelland, & Co., of Newry, and in the course of a few more years I hope it will be quite an acquisition in the winter garden.—H. EWANK, *St. John's, Ryde*.

THE FRUIT GARDEN.

SAUCERS OF SOIL v. SAUCERS OF WATER FOR FORCED STRAWBERRIES.

I CAN, after years of experience and a fair trial of both plans, recommend saucers of soil for placing beneath the pots in Strawberry forcing in preference to empty saucers, and they should be used from the beginning; that is, from the time when the plants are started. As Strawberry forcers well know, plants set upon dry airy shelves in forcing-houses soon become dry at the root when the longer and drier days of March, April, and May come on, and require frequent waterings—sometimes two and three times a day; hence recourse is usually had to saucers to hold a reserve supply of water—a reserve which during dull weather is an evil, as the plants do not need it, though in bright dry days they will absorb what water they receive in the pot and the full of the saucer besides; at least the water goes away by evaporation and through the plant together. All the trouble and bad effects of this practice are, however, avoided by filling the saucers with good soil, and placing them under the plants at the beginning. The first thing we do here is to fill the saucers, which are of a size in proportion to the pots and have a hole in the bottom, over which one crock is placed, and when they are all set on the shelves or wherever the plants are to be started, the latter are set upon them. But before doing so, the holes in the bottoms of the pots are examined and enlarged a little if necessary with the pointed claw of a hammer to let the roots out easier. I have just been looking over some hundreds of plants to-day which are throwing up their flower trusses and find, as usual, that the fresh, new roots have already taken possession of the soil in the saucers to such an extent that when a pot is lifted up the saucer nearly clings to it. These roots have not been encouraged by bottom heat, the plants stand on a stage in the Strawberry house, and anyone may judge what an advantage it must be to the plants to have such a quantity of fresh roots to draw upon, and which they could not have by any other means. The result is, always having crops of good fruit without using a drop of liquid manure of any kind during the forcing season, while the plants seldom or never need water more than once a day during the driest weather. The soil in the saucers consists of pure sifted loam and sand, to which has been added a good sprinkling of Standen's manure, the best stimulant for Strawberries and pot Vines with which I am acquainted. The soil in the saucers never gets dry, as it is not exposed to evaporation like the ball of soil in the pot, consequently the plants are never in danger of flagging in hot weather. The fact of the matter is, that though the rooting through the bottom does not in the least check the activity of roots in the pot, the main roots are in the saucer by the time the fruit begins to swell off, and when the plants are finally turned out, the saucer is a complete mass of young, healthy shoots. It is an old practice of good Strawberry growers, I am aware, to set the pots on turves placed on the shelves, which amounts to much the same thing as the practice I recommend, only, that it is seldom convenient to use the turves as they entail the necessity of leaving the plants in the same place till the end, or of sacrificing the roots in moving them, whereas it is a perfectly easy matter to move the saucers along with the pots, as we have to do with any batch of plants that are forced.

J. S. W.

BEST STRUCTURES FOR PINES.

ABUNDANCE of light—one of the first essentials in the culture of the Pine-apple. Wherever the plants receive the most light and for the longest period every day there you will always find the largest, most robust and best matured plants. It follows, therefore, that that kind of structure which admits the greatest quantity of light must be the best for the purpose, and the structure which does this is a span-roofed one running north and south. On a house of this kind

the sun, about midsummer, shines for sixteen or eighteen hours every day unless it is shaded by trees or other objects, which it should not be; whereas a lean-to or hipped-roof house does not receive the sun's rays fairly for much more than half that time. The difference to the plants may, therefore, be estimated. I have grown Pines in very different structures, from old-fashioned houses built more than seventy years ago to modern span-roofed ones glazed with wide panes on all sides, and nothing has ever struck me more than the difference in the plants in the different houses. Here we for a long while grew a portion of our plants in a low but light lean-to pit, and the others in a span-roofed house standing north and south, and it was only too noticeable as regularly as the autumn came round that the plants in the span-roofed house were always the best by a long way, though otherwise treated exactly alike, and consequently the latter were always selected for early fruiting kinds. I would prefer a lean-to house for winter fruiting sorts, because such a house gets all the sunshine that is going at that season and economises the heat best, but for growing plants in, or for fruiting the plants at any other period of the year, a span-roofed house is the best. Only those who have cultivated Pines under different circumstances, as regards houses, can fully appreciate the difference which plenty of light all round makes to the plants. I remember talking on this subject to Mr. Ward, of Bishop's Stortford, (who has, perhaps, produced heavier Queen Pines than any grower in England) on one occasion when we met as competitors in the Pine-apple class at Manchester, and he remarked to me that if he wished to give a Pine plant every chance possible, he would plant it in a span-roofed house and give it as much room as would allow one to walk all round it, so much importance did he attach to giving the plants room and light, and although Mr. Thomson, author of "Culture of the Pine-apple" grew his finest Pines at Archersfield in old-fashioned lean-to pits, he was fully sensible of the advantages of light, and says, in his book, that in our climate Pines cannot possibly have more light and sun than is necessary, and that Pineries should therefore be constructed so as to admit and diffuse as much light and sunshine as can be had, and the kind of house he recommends for the purpose is a span-roofed one, except for winter-fruiting kinds. Mr. Baines (p. 52) says fresh loam is the only soil suitable for Pines, a statement which is very far from being correct. Mr. Miles, of Wycombe Abbey, grows his Pines in yellow loam of a fine silky texture, but here, the loam, though suitable for many things when used alone, does not suit Pine till it is mixed with one-third or more of peat and sand, and in this compost we grew our Pines always, and had always plenty of fruit both large and good. But at Broxmouth Park, near Dunbar, the seat of the Duke of Roxburgh, we many years ago saw a houseful of fine healthy Pines growing in pure peat, and the fruit was so good that it was thought worthy of appearing at the Edinburgh Show, and, if I remember rightly, it received a prize. Now between peat and loam there is much difference, chemically and mechanically, and, between the two, no doubt suitable composts could be prepared according to any one's needs.

Wortley.

J. SIMPSON.

VINE CORDONS IN FRONT OF WALLS WITH A SOUTHERN ASPECT.

ALTHOUGH Grape growing occupies a foremost place in fruit culture in England, it has not as yet succeeded in placing the Grape within the reach of the middle classes in sufficient quantity and, consequently, at a price that can be afforded by them. There is the possibility of producing good useful fruit (not exhibition bunches) of early sorts on cordons. The best place is probably in that space of 6 ft. at the foot of south walls, usually occupied, in part only, by Peaches, Nectarines, and the like. There is no more reason why the Vine should not do well in company with these than that undergrowth should not exist under timber. That they do well under such conditions is a matter of fact. The first row may be 3 ft. from the wall, and the second 6 ft., the plants being set out alternately. In the second year after planting, if good canes be selected, the Vines may be cut down to about 1½ ft. from the ground, just as Willow stools are created. The canes may be lightly bundled together, and brought over—the back row to the front wire, and the front row to the hinder one; by this means but little shadow will be thrown on the fruit-bearing parts. When the plants are strong, and produce a quantity of shoots, four or five of the strongest may be selected, all weak ones being cut away; and each year, early in spring, they may be cut back to two eyes each. The after cultivation is simplicity itself, consisting of stopping the main shoots at 4 ft. in length, removing all tendrils and weak unfruitful shoots. The ground may be mulched with clean straw, so that the bunches may be kept clean. Thinning out the bunches is not necessary. Such Vine stools produce annually from ten to twenty bunches, and, as they grow under quite natural

conditions, they are not exhausted in twenty years. It is not an uncommon thing for 200 plants to bear between 2000 or 3000 bunches, and that, too, without fire-heat, syringing, or any watering whatever.

Moravia.

SILVESTRIUS.

PLATE CLXV.

NEW CAPE HEATHS.

HEATHS have a charm for every one, and yet for many years past they have not received the attention which they deserve, simply because they are somewhat difficult to cultivate, and do not grow into large specimens in a single year. The difficulty, however, is more imaginary than real, and I venture to assert that any one regarding the attentions bestowed upon their plants as a labour of love and not in the light of a task, will certainly succeed in producing good healthy specimens. But even supposing Heath cultivation to be surrounded with the amount of risk that many assert pertains to it, it is not creditable to cultivators to have given up the task in the manner in which it has been done. Happily the demand for good varieties of this class of plants is again in the ascendant, and therefore it has been thought desirable to give illustrations of some fine hybrids which have been produced and recently sent out from Messrs. Rollisson's establishment at Tooting, a firm long famous for this class of plants. The varieties in the annexed plate can all be recommended for vigorous habit and free flowering, and at the same time they are thoroughly distinct from any other species or varieties hitherto in cultivation. They may thus be briefly described. *E. obbata cordata*, a beautiful, free, large-flowering variety which, if grown under glass, is a pure shining delicate white, but if a tinge of rose or flesh colour be considered an additional charm, it can be obtained by exposure to the open air for a few days, whilst an additional point of excellence is that the flowers are entirely destitute of that peculiar gummy exudation so characteristic of the flowers of nearly all hard-wooded Heaths, and hence it retains its purity until the flowers die naturally. *E. opulenta*, habit robust and free, flowers produced in large whorls, the colour being a deep lake shaded with or crimson, limbs white and spreading. *E. effusa*; the flowers of this variety are large, and crimson-scarlet in colour, while the segments of the limbs are pale sulphur. *E. ornata* has flowers large and much swollen, colour at the base, rosy-carmine, the remaining portion being pure white, with the exception of a circle of green round the neck. *E. tricolor profusa*; the trusses and flowers in this variety are large, deep, rose-coloured at the base, shading upwards to flesh colour and ultimately white; an elegant variety of tricolor, and, as its name implies, an abundant bloomer. Fit companions to these, in order to make up a dozen varieties, are *E. Cavendishi*, *Massoni major*, *Thomsoni*, *obbata*, *jasminiflora alba*, *ampullacea major*, and *tubiformis*.

W. H. G.

GARDEN LABELS.

FROM what is stated by "S." (p. 91) I infer that to invent new kinds of plant markers is easier than to improve upon the old. I recommend those who require them first to determine what that quality is in the marker that they most desire. Is it appearance? What can be prettier than the terra cotta productions of Messrs. Maw? Is it durability? Those manufactured in zinc by Mr. Yeats, of Mortlake, are practically indestructible, and are also those which are made of sheet lead and have the name of the plant stamped on them. Is it that they may serve only a temporary purpose and last a few seasons only? Nothing can be more convenient than the wooden labels sold by Messrs. Blackitt at a price within the reach of most people who are willing to pay for such articles. These, however, as well as the zinc labels, are easily made, and the two processes are described in Vol. VII. of THE GARDEN (p. 397) and a considerable saving of expense can be effected if desired. Of the indestructibility of zinc labels and indelibility of the writing on them, I have sufficient evidence. I now send two specimens, which, as will be seen are quite legible, that I discovered this morning in some rubbish in an outhouse, and which I know were in use before the year 1851. They can be made of the clippings collected in the shops of those who work in that metal, and with a pair of shears can be cut into any form that may be required. On the subject of garden labels some very useful hints are given in Vol. X. (p. 297) of THE GARDEN.

B. S.



GROUP OF NEW ERICAS.



TREES, SHRUBS, & WOODLANDS.

HARDINESS OF THE HYDRANGEA.

THIS matter, in conjunction with that of its sometimes flowering blue, has, every now and then, been commented on by writers in gardening periodicals ever since such publications existed; and yet the plant seems as capricious as ever, more especially in regard to its flowering, while of its hardiness, I may say that about the largest plant of it I ever saw was growing in a garden fully exposed on a bleak situation in Northumberland, and that was more than fifty years ago; but I believe that this plant was much injured or wholly cut down to the ground in the memorable winter of 1837-38; nevertheless, it must have survived many winters anterior to 1825, when I first saw it, and it flowered well; but its blossoms were of the usual pink hue. The situation was a dry one, though extremely high and exposed; the soil, an open one, rested on yellow sandstone, large quantities of which were quarried for building purposes within 100 yards or so of where the Hydrangea was growing. At that time it was known that Hydrangeas sometimes flowered blue, but such as did so were supposed to be distinct varieties, a notion which has, of course, been since exploded; but I confess I have not been able to account at all times for the various caprices which the plant has shown under cultivation. Even but a very short distance from where I write, I can point to two plants growing in two cottage gardens only a few yards apart, one of them as good a blue as I ever saw, and the other a good pink; and I remember being very much puzzled by seeing at a horticultural exhibition, a few miles north of London, six plants in 8-in. pots producing beautiful blue flowers, and a like number in pots exactly similar that had bright pink flowers. As both came from the same place I felt surprised at this, as I have long held that the character of the water used for plants cultivated in pots has as much influence as that of the soil, and it is customary to use the same water for all kinds of plants. As a truthful exposition of failure is almost as useful as that of success, I will mention here one into which I fell many years after the one above alluded to; still it is many years ago now, but it was subsequent to the era in which it was affirmed that the change of hue in the Hydrangea was due to the presence of iron in some form or other in the soil. Well, being anxious to obtain blue flowers, and peat not being handy, I potted a few plants in the sandy substance which had dropped from an ordinary grindstone, judging that this must be charged as thoroughly with iron as any mixture could possibly be in a mechanical way, but the experiment was a failure, for though blue flowers were produced they were not of so good a colour as I expected; this was doubtless owing to the plants being watered with hard water from a well or pump resting on the limestone; perhaps the result would have been different if clear rain water could have been had, but the result, coupled with some other trials in which iron filings, &c., were used, puzzled me, and I confess not being at all times now able to account for the freaks the plant will take, for now and then we see both blue and pink flowers on the same plant, and, in the same truss, an inclination to present both hues. Certainly, the health of plants producing both colours is not so good as when only one kind is produced, but I am not in a position to affirm that one is any better than the other, as I have seen both equally vigorous. In a usual way Hydrangeas are very commonly met with in cottage gardens in the southern counties, but where they seem really most at home is in Devonshire; I well remember, when walking through the grounds at Mount Edgecumbe in that county, Mr. Pooley, the then gardener there, pointed out both kinds in the greatest perfection, and on the way from the kitchen garden to the mansion he pointed out a ditch as the boundary between the two; it had doubtless at one time been a sort of chasm formed by Nature, on each side of which soils of different characters had been thrown up—trees of most kinds thriving well in both, and there were many things growing there that were not at that time often met with out-of-doors; notably, I remember, a Eucalyptus more than 20 ft. high, but whether it was the one which of late years has been brought into notice or not I am unable to

say, but it was in a very sheltered position and evidently doing well. But to return to the Hydrangea: I should think it very seldom suffers from frost in Devon or Cornwall, although elsewhere in England I have been led to regard it of about the same hardiness as the Fig, and liable to be cut down to the ground in very severe winters. In other respects it resembles that tree also; both present a great amount of pith in the wood of the current year, and if another tree of similar habit be added to the list I would say *Paulownia imperialis* is the one. The Catalpa may be a little harder, and so may, perhaps, be the hardest *Fuchsias*, but as my object was only to speak of the Hydrangea I will go no further.

A RETIRED GARDENER.

RATE OF GROWTH AND QUALITY OF TIMBER.

ALLOW me to add a few more words on this subject, in order to place it in a more intelligible light, and also by way of an answer to Mr. Baines. The question between him and me is not really confined to the Wellingtonia, nor to home-grown timber alone, as Mr. Baines now states. He made no such exceptions in his first letter, but laid it down broadly as a rule "that the natural laws which govern the development of vegetable life in the formation of woody fibre pointed generally in one direction, which is that slow growth means comparative strength and durability." This, and this only, was the statement to which I took exception. Surely Mr. Baines does not mean to assert that the trees, whether exotic or otherwise, which are grown for timber in this country are governed by different laws from those to which they are subject elsewhere; this is about what his statements now amount to. Be this as it may, to the rule he gives for estimating the quality of timber I furnished several notable exceptions, which, according to Mr. Baines, are outside the question, but the real truth, I am afraid, is that Mr. Baines overlooked the array of facts which might be urged against him, just as he has been too hasty in his assertions about the laws which govern the development of vegetable life in the production of woody fibre. The explanation of the matter, so far, is this, as physiologists explain, and correctly enough, as any one can determine for themselves:—Plants are composed of two substances, the one cellular and the other fibro-vascular; the first is brittle and perishable, and the second strong and enduring. In the Raspberry, for example, we have wood consisting principally of cellular tissue, and, consequently, brittle and perishable, and in the Hemp and Flax we have plants composed almost entirely of fibro-vascular tissue, and, consequently, tough and strong. Now these two substances vary in trees according to the rate of growth and other circumstances. When the tree grows fast it produces more fibro-vascular tissue and less cellular, and the contrary takes place when it grows slowly; hence, in the first case, the timber is strong and tough, and in the last brittle and unenduring, a theory, it will be seen, that is quite opposed to that furnished by Mr. Baines. Other causes of strength and durability consist in the secretions deposited within the tissues. I do not know what the difference may be between the Oaks of Hertfordshire and Westmoreland to which Mr. Baines alludes, nor does it matter in the smallest degree, but this I will assert, that the Oak which grows in the best soil and grows fastest will be superior to that which, through poverty or other causes, has grown slowly in the same locality. In making comparisons conditions must be equal. Until the fallacy of the theory now resuscitated by Mr. Baines was exposed by Knight, Lindley, Holt, and others, it was argued that because the Poplar grew fast and produced poor timber, so all other trees which grew fast must necessarily have the same fault; but, as Lindley points out, the Poplar is bad when it grows fast, and still worse when it grows slowly. Regarding the Admiralty Test Tables and others furnished by Lindley relating to fast and slow grown Oak timber, the following is a summary of the results tabulated: "The best (Oak) in quality was from Strathfieldsaye, and grew as much on an average as 1 in. in diameter annually, and all those others which grew above four-tenths in diameter were of good quality. On the other hand, all the slowest-grown timber in both tables was bad or indifferent." The Admiralty Tests are no sham, and these facts speak for themselves to any unprejudiced mind. C.

— I was not unacquainted with the article from which Mr. Syme quotes, in order to make us believe in the quality of Wellingtonia timber, and which he says settles the question of its durability; but it most certainly does not, so far as my convictions go, even in that grown in its native country, and which has nothing to do with the subject at issue, for not until I have brought myself to believe all the exploits of the mythical Baron Munchausen can I consent to credit the story quoted. Allow me to be clearly understood in totally disbelieving this and similar statements, I do not for a moment question

any one's veracity, but I take most decided exception to their powers of observation or the data upon which their conclusions are formed. We are asked to believe that the trunk of a certain tree has lain above ground fully exposed to the weather 380 years and an unascertainable number beyond these; yet it bears no signs of decay in any part; and, in the other extreme, there are gigantic trunks of Silver Firs that, under like conditions, are every atom rotten in two years, and this in a Californian climate. Why, if the whole of the wood of these Silver Firs had been as soft and spongy as the bark of Taxodium sempervirens, they would not have reached a similar stage of rottenness if lying in the moisture-saturated tropics for the time. To ask any one who has had a fair opportunity for acquiring a knowledge of timber generally to credit this is an attempt to tax credulity to an extent that is almost amusing. But, when evidence such as this is adduced, it has only one effect, and that is to damage the cause which it is thus sought to sustain. When writing the first few lines on this subject I was not unmindful of the different species of trees that form wood rapidly, but which, nevertheless, is of good enduring quality; they simply are the exception which prove the rule, existent in this, as in almost everything else of a kindred character. Nothing that has yet been advanced by those who have attempted to make out that this was not substantially correct has shaken the facts of the case.

T. BAINES.

LOPPING DECIDUOUS TREES.

THE winter season is the time when this kind of work is usually performed, and a few remarks upon the practice from a general point of view may not be out of place. It is a subject which embraces a wide field, from the removal of a limited number of branches, which it occasionally becomes necessary to cut out of old trees that happen to exist in and about small gardens, to the wholesale lopping which we frequently see resorted to with hedgerow timber over large estates, and I may here observe that whether we look at the subject from the examples often practised on in gardens up to where lopping is carried out on an extensive scale, there is not a single operation connected with rural economy in this country wherein there is so little knowledge brought to bear, so much mischief caused in appearance, often irreparable in the case of small or comparatively small places, and so much real injury done to the look of the landscape, with no counterbalancing benefit to any one. I do not mean to say that under no circumstances should large or medium-sized trees have a portion of their branches reduced or cut out; this is very frequently not only admissible but necessary, provided the work be done with judgment. In medium-sized gardens and small pleasure grounds severe lopping, often to the extent of cutting the heads nearly or wholly away is frequently practised upon trees that either naturally grow too large for planting in the positions which they occupy or have fulfilled the purpose of affording shelter for a time, after which their presence could with advantage be dispensed with, and consequently they should be removed altogether. But it requires some courage to cut down trees when they have grown up near a dwelling, or already exist in over-close proximity to where a house is afterwards built, however unsuitable or out of place they may be for the place in which they stand; and when there is an absence of the knowledge requisite to judge correctly in the matter, mutilation, instead of removal, is generally resorted to. A similar course is often pursued where, in place of thinning out deciduous trees where their increased size demands more room, the whole are kept and mercilessly disfigured; than this nothing is more opposed to the admitted principle that a single well-developed tree judiciously placed is vastly preferable to any quantity of mutilated examples. Bearing upon this subject, it frequently happens that deciduous trees in shrubberies, which have attained considerable size and which have occupied the position in which they stand long before the grounds were laid out, and where they are by far the most conspicuous and important objects, and consequently can ill be spared, somewhat suddenly lose all their upper branches, and begin to push out a quantity of small spray from the lower part of the trunk, a sure sign of languid vitality, although their age is not such as would directly lead to decay. In cases of this kind the complete removal of the heads, leaving them mere pollards, becomes a necessity, though no reasonable expenditure would have been grudged to have kept them in full vigour. I have recently seen several instances of this description, where pleasure-grounds more or less in extent had been made within a dozen years or so, and where the existent trees—mostly Oak and Elm—were of the very greatest importance in giving almost at once an apparent age and character to the places, that nothing in their absence could supply or compensate for. The cause of their loss was clearly visible, but too late to remedy the mischief: shrubs had been planted

thickly on the ground occupied by the roots of the old trees, and had grown freely without any attempt at the necessary thinning, so as to prevent their exhausting the soil of its fertilising elements, as also of moisture, which the roots of the shrubs from their position near the surface, do to the starvation and exhaustion of the much more important trees. These were direct evidence of the frequent mistakes made in unduly taxing the capabilities of the soil by over-cropping, with an absence of enriching elements, and which is just as injurious to the shrubs and trees, as it is with annual crops, though in the latter the effects are sooner seen. In the case of lopping, when it is carried to the extent that is frequently practised on hedgerow timber, it is at once destructive of the best features in the landscape—trees in their natural form. By a little observation, in passing over some of the principal lines of railway that traverse England; it is easily seen to what length this kind of work is carried out on some estates, where the trees often standing from six to a dozen in the place where one ought to be, either as regards the general appearance of the land, the production of good timber, or consistent with the growth of either corn or grass, but in place of their being confined to a sufficient number of healthy fully-developed examples, all are so denuded of branches that they consist of nothing but long, straight, attenuated stems and meagre heads, the whole not unlike a gigantic Birch broom with a long handle. As to the appearance of such, individually or collectively, it is needless to say anything. And, in respect to the formation of timber when the leaf surface is kept so much reduced, I have ascertained, by actual measurement with several kinds extending over a series of years, that the increase with trees so treated was not more than one half compared with examples of the same respective varieties grown under exactly like conditions, except that their branches were left intact, beyond a reasonable amount of pruning in the early stages of their growth.

In respect to the removal of large under branches from trees that have attained considerable size, where a sufficient cause exists for this being done, it requires much more judgment, and less of the indiscriminate serve-all-alike procedure than is often practised in the work. Some varieties of deciduous trees cannot bear large branches being cut away without injury to their general healthy condition nearly so well as others. The Beech, for instance, influenced to a greater or less extent by the nature of the soil and situation in which it is grown, is usually so much injured by the removal of branches that have attained any considerable thickness, that decay and ultimate death often ensue, the consequences generally being apparent by broad stripes of bark, and the outer wood to some depth immediately below, and extending for a considerable distance down the trunk, dying, from which decay ultimately extends so as to cause their premature destruction.

T. BAINES.

THE BEARBERRIES.

ALL the Bearberries are desirable and interesting shrubs, and well deserve that attention should be called to their merits as garden plants. Formerly the genus contained a good many more species than it does at present, the kinds removed being now classed under different genera. There are about a dozen species confined to north temperate regions, and of these the majority are natives of North America. Those hereafter mentioned do well in the open air in this country, and flourish best in peaty loam. Seeds offer the readiest means of propagation with most of the sorts, though all may be easily increased by means of layering. The two indigenous kinds make excellent rock plants, and, as such, deserve a place even in select rockeries.

The Black Bearberry (*Arctostaphylos alpina*), the badge of the Clan Ross, is rare as a native plant, being confined to dry, barren Scotch mountains from Perth and Forfar northwards, and ascending to elevations of nearly 3,000 ft. above sea level. It forms compact, woody patches, with stout, leafy, interlaced branches and scaly bark. The deciduous, spatulate leaves, which are wrinkled above, have ciliated margins, and are narrowed into a short stalk. They vary in length from $\frac{1}{2}$ in. to $1\frac{1}{2}$ in. and are coarsely toothed above the middle. The white blossoms are produced in twos or threes, and appear with the young leaves. The berry is black, and measures $\frac{1}{2}$ in. in diameter.

The Common Bearberry (*Arctostaphylos Uva-ursi*) is a handsome little shrub with trailing branches and quite entire, glossy, evergreen leaves. It prefers Alpine, heathy, and rocky places, often covering the ground with beds of considerable extent. Its geographical distribution is more southerly than that of the Alpine Bearberry, being found as far south as Cumberland and Yorkshire; it, however, ascends to even a greater elevation. The pretty urn-

shaped pink blossoms, followed by red fruits which afford an excellent food for the moor fowl, are produced in May and June in crowded racemes. In his "Flora Lapponica" (p. 130), Linnæus states that great quantities of the leaves and branches are gathered in the north of Sweden and sent to Stockholm, where they are bought by tanners for the same purpose as the Sumach (*Rhus Coriaria*); they are also used to dye wool. This plant was known to, and occasionally used by the ancient physicians, and, of late years, has been successfully employed in pulmonary complaints and also as an astringent tonic.

The Glaucous Bearberry (*Arctostaphylos glauca*) a native of Oregon and California, where it is known under the name of Manzanita, gets to be a good-sized shrub and bears abundantly large drupe-like fruits of a pleasant taste, which are much used as food by the Indians of that region.

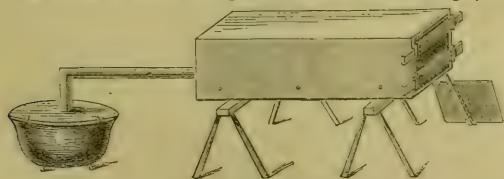
The Woolly Bearberry (*Arctostaphylos tomentosa*), is a curious and beautiful hardy evergreen shrub from California and the Rocky Mountains, where it is also known as "Manzanita;" indeed on the western coast there are several species, mostly shrubs or small trees, which have been much confused. It is a neat-habited bush, with roundish, glossy, leathery leaves and hairy branches; the foliage, when young, being also somewhat woolly. The wax-like flowers open about March, are pure white, and are borne in dense, drooping racemes. As a cool greenhouse or conservatory plant it is a decided acquisition. Its hardness, too, has been thoroughly tested at Kew, where a good specimen is standing perfectly uninjured by the late severe weather, although it has received no artificial shelter of any kind.

The Pointed-leaved Bearberry (*Arctostaphylos pungens*), from the same countries as the last-named, is a much branched, erect growing shrub, with leathery, quite entire, acute-pointed leaves, from 1 in. to 1½ in. long, downy when young and smooth when old. The terminal, drooping racemes are made up of eight or ten blossoms—white, tinged with rose.

Another kind wholly different from all the foregoing, is one cultivated in the Edinburgh Botanic Gardens under the name of *A. californica*; this is a very vigorous, trailing, evergreen shrub, with spatulate, leathery, entire leaves; the flowers I have not seen. G.

CHEST FOR STEAMING TIMBER.

An apparatus for steaming timber for bent work may be constructed as follows: A box of 2-in. plank is made of sufficient length, and



Chest for Steaming Timber.

about 1 ft. wide and deep. Three cross bars are fitted at the point shown in the engraving, and about 1 in. above the bottom. The timber rests upon these, so as to expose every part to the steam. The movable door is held in its place by bars passing through staples, as indicated in the engraving. The box rests upon trestles about 4 ft. high. A common cauldron or boiler may be used to make the steam. This may be hung upon a tripod, or set in a rough arch of stone. A wooden cover is fitted to the top and held down by clamps or weights. A pipe made of wood or metal connects the boiler with the steam box.—"American Agriculturist."

[A somewhat similar contrivance to that here described is used in this country for steaming timber for wheelwrights.]

The Hardest Evergreen Magnolia.—It is in such seasons as this that the ferrugineous variety of *Magnolia grandiflora* shows its superiority, and we have little doubt it will generally be found that it is unburt, or comparatively so, while the favorite *Emouth* variety, is killed down to the ground, if not indeed killed outright. It usually happens under such circumstances as these that *M. grandiflora ferruginea* stands quite uninjured, and therefore we have come to regard it as the hardest, as it is the freest-blooming, and in every way the best variety of this grand American evergreen.—"Gardeners' Chronicle."

WOODLAND WORK FOR FEBRUARY.

UP to the present time there appears but little chance of fetching up arrears of planting, and, whenever the weather breaks, the most strenuous efforts must be made to push forward such work with all possible speed. In many places evergreens removed late are completely cut off, and, when the spring arrives, we may expect to find much mischief done in late made plantations of all kinds. But wherever early provision for planting was made by trenching and holing, the benefits of the frost will be felt in the complete amelioration of the soil, so that good work may be done in the spring. The frosts have greatly impeded the cutting of underwood, and, owing to the brittleness of the wood, much of the work done is of an unsatisfactory kind, and the stools should be dressed with the axe and adze as soon as the frost is out of them. The weather has been greatly in favour of the removal of all thinnings of timber, and of the produce of early cut coppices. All timber, except Oak, should be felled by the end of the month. Wherever there is a demand for the bark of the Birch, Larch, Willow, Spanish Chestnut, &c., these may be cut down later in the season.

The drier portions of the woodlands should be selected for the earliest planting with Larch and Spanish Chestnut, afterwards following up with Sycamore, Beech, Ash, and Elm, and finishing upon the more retentive soils with the Oak, Birch, Willow, and Poplar. Wherever Brambles and rank undergrowth of any kind abound, strong plants should be used for filling up, as smaller ones would soon be smothered. But, in forming entirely new plantations, three-years-old Sycamore, Maple, Spanish Chestnut, Pinaster, Larch, Birch, Ash, and Alder, will be sufficiently strong; the Oak, Spruce, Beech, and Walnut should be used at the age of four years; and the Holly, Silver Fir, and some others, at that of five years.

The formation of Hawthorn hedges should be completed as soon as the weather will permit, as this plant comes early into leaf. In all soils, except very retentive ones (for which the Hawthorn is not well suited), the plants are better placed upon the level of the adjacent land. The raised mound, with its deep side ditches completely cuts off the roots from the free range which they ought to have in the soil beyond; hence the scrubby appearance which hedges so placed too often present. In such situations their roots also receive a severe pruning whenever the ditches are scoured or shovelled out. In very wet situations tolerably good fences may be made with the semi-aquatic plants—the Alder, Willow, and Black Poplar. When cropped close, the Alder and Poplar feather low, and the forced growth of the former, combined with the bitter taste of its leaves, prevents its being cropped, and renders it well-nigh impervious to cattle. The Willows may be thickly planted in such situations, and their branches interlaced, so that no stock will find its way through fences formed of these.

Layering, both in the woodlands and the nursery, may now be continued, the layered part being fixed firmly in the soil by means of a wooden peg, and afterwards covered to a depth of about 4 in. with good soil. The end of the shoot should be left in an erect position. Such trees as are intended to attain considerable size in the nursery should, at their final transplanting, have sufficient space to enable them to develop robust stems and well balanced heads, as upon these two points much of their future success will depend. Such as are afterwards intended to stand singly or in small groups in situations of exposure should also remain for some time in the most open of the nursery quarters.

Late in February or early in March Willows may be cut both for the use of the cooper and the basket maker. Those for the former may be cut tolerably close to the ground and near the swelling at the base of the shoot, for as very few shoots from the stool are required where large growths have to be produced, the ascending sap has sufficient outlets from this protuberance; but, in cutting the basket maker's Willows, the section should not be within two or three buds of the base, and made in a slanting direction. The cut osiers are prepared for peeling by standing on end in bundles in a few inches of stagnant water, and they are ready for the operation some time in May.

Cuttings of various kinds may still be inserted in the nursery beds, though a better start will be obtained by those put in at the end of the autumn. Elder branches taken from the last year's shoots may have one pair of their buds under the soil and one above. The cuttings of Poplar and Willow require to be planted tolerably deep in the soil, and they should be taken from the last year's shoots; but where it is intended to plant a permanent Osier bed, stronger cuttings, of the length of 18 in. and upwards, taken from two years' old wood, are preferable. But, as this kind of planting consumes so much material, the strongest of the one year's shoots, and about 1 ft. in length, are often substituted.

As soon as the larger deciduous kinds have been got out, the removal of two years' seedlings will require attention. This may be

followed up by the transplanting of seedlings; but these and the Larch are generally better left until early in March. For filling up all vacant spaces in the nursery which have been under green crops during the past summer, and which are not required for seed beds, stock should now be ordered in, or at any rate selected in readiness for removal when required. Chestnuts and Acorns may still be put in, giving them a lighter covering than in the autumn. Choose plump, well-ripened seeds, the produce of vigorous trees in the prime of life, as these produce the strongest plants. In fine dry weather, towards the end of the month, sow Sycamore, Maple, Ash, Beech, and Elm seeds. Also dig and lay up roughly such quarters as are intended to make seed beds for the Fir and Pine seeds in March.

Whenever the weather will permit, keep the hoe going among the nursery lines. Also keep a watch for mice and other destructive rodents, which soon do a great amount of mischief among the seed-beds. Digging between the nursery rows, provided the operation be performed with care, greatly assists the formation of fibrous roots and renders the plants better fitted for future removal. Before the March winds come, it will be well to stake and tie all large transplants likely to require it, and to fix the soil well around such as have already become loosened.

A. J. BURREWS.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS.

Beech Trees and Underwood.—Allow me to give the following particulars in reference to this subject, as I am of opinion that there is no more difficulty (if so much) in growing underwood under Beech trees than there would be under Elm or Oak, provided the Beech trees were not planted very closely together, or the branches allowed to hang so low down as to shut out sunshine and air. We have here, in the park, many Beech trees, also Elm, Chestnut, Limes, Oaks, Horse Chestnut, and various others, but I can see no difference in the Grass under any of them, it being as luxuriant and plentiful under one kind of tree as under another, the branches being from 5 ft. to 6 ft. from the ground. There is also, running through part of the shrubbery, a kind of avenue of large Beeches, planted at long distances from each other, but most of them meet at the top, forming a thick shade when in leaf; under these the ground is very full of roots, as it has not been dug for ten or twelve years, the space under the trees being planted with common Laurels, Portugal Laurels, Laurustinus, Box, Irish Yews, common Yews, green Hollies, Aucubas, variegated Hollies, and a few others. Of these some are making fine plants, especially where they have head room, and others grow so fast that we have to prune hard to keep them within limits. Not a mile distant there is a very large group of Beech trees planted thickly, with an occasional Larch or Scotch Fir; these are all drawn up together very high, with scarcely any lower branches upon them, but underneath there is scarcely any vegetation, except an occasional Bramble or tuft of Grass. Even common weeds make no attempt to cover the bare surface, but here the ground is very stony and poor.—W. DIVERS, *Maidstone*.

—With regard to the Rhododendrons in the Beech wood at Alderley, seeing the matter doubted, I beg to confirm Mr. Hossack's statement. It is over twelve years since I lived at Alderley Park, and they were then all that Mr. Hossack describes them at a later date.—J. SLATTERY, *Berrymeade Priory, Acton*.

Pinus Laricio.—Nothing connected with tree planting for purposes of timber growing goes farther to show how slow people in some cases are to adopt anything new, or comparatively so, than this Pinus, the excellence of the timber of which has long been well known. This would be more easily accounted for if the Larch had continued healthy and vigorous, but with the way in which it is now often affected by heart-rot when the trees are approaching an age to be of value for purposes where size is required, and the still greater extent to which it is attacked by disease in the earlier stages of its growth, to continue planting it in the numbers that still is practised seems like hoping against hope. The quality of the timber of *P. Laricio* is sufficiently known to establish its character, and the only reason that appears intelligible why it is not more generally adopted by planters is the higher price, consequent upon the young plants in their first stages of growth, being somewhat delicate, but after that stage has been passed, it grows away with a vigour which leaves nothing to be desired. The matter of cost might, in a great measure, be met by only planting it in such quantities as may be required for permanency, using cheaper kinds for nurseries and still later thinning out. In addition to the value of its wood, the progress which it makes is another matter in its favour, being quite as rapid in growth as is consistent with strength and durability of timber.—T. BAINES.

ROSES.

ROSE GROWING IN FRANCE.

PRUNING ROSE TREES.—Pruning is an operation which has for its object the formation of the head of the Rose tree into such a shape as will best suit its nature, as well as develop young shoots that will yield an abundance of bloom. The method of pruning to be adopted depends on the natural habit of the particular variety with which we have to deal. Vigorous pruning in the case of a free-growing variety gives rise to an exaggerated development of suckers at the roots and of watery shoots on the branches, growths which exhaust the energies of the trees without producing any flowers. On the other hand, a slight pruning in the case of a weak variety will promote the production of more Roses than the sap will nourish, the flowers being small and badly shaped. If we could divide Rose trees into distinct classes, according to their mode of growth, it would be easy to point out the particular method of pruning which is best adapted to each sort, but it is very difficult to make this classification in an absolute manner, besides which the luxuriance of plants of the same variety differs considerably, according to the fertility of the soil and the mode of culture. It follows, therefore, that in practice rules that are too absolute may become embarrassing, for the practical cultivator must not only take into account the luxuriance of the growth of the particular variety, but of the particular individual plant also. It will be therefore as well to confine ourselves to a few general principles as applied to the natural divisions of Roses, without specifying varieties. Free-blooming and slow-growing Roses should be pruned down to two or three eyes, or say to within $1\frac{1}{2}$ in. to $1\frac{3}{4}$ in. of the stem; Roses with varying habits of growth to four or five eyes, or from $3\frac{1}{2}$ in. to 4 in.; Roses of vigorous growth to six or seven eyes, or 6 in. to 7 in.; climbing Roses bearing but few flowers to 8 in. or 12 in.

PRACTICAL DETAILS OF PRUNING.—Going up close to a Rose tree we examine it rapidly, and determine, from two or three glances, which are the branches that are to be preserved. Trim the head by cutting down all watery shoots, weak or badly-placed branches; cut away the stumps of branches pruned off the year before, and any dead wood that may be left; in fact, clear away everything that interferes with the growth or beauty of the tree. When nothing remains on the tree but the branches to be preserved (fig. 25), that is to say, from six to ten, according to the vigour of the subject, we must commence pruning them, in accordance with the principles there indicated. The cuts should be made in a slanting direction opposite an eye and at $\frac{1}{2}$ in. above it. The eye chosen should, if possible, face outwards. As a guide to amateurs who are obliged to depend on themselves, we shall say a few words on the mode of pruning the best known varieties. In the case of Tea Roses, Bourbons, and Noisettes, which are very prolific in flowers when grafted on the Brier, we must prune vigorously, leaving a space of 3 in. or 4 in. between the branches. With Bengal, Tea, Noisette, and Bourbon Roses growing on their own roots we must only leave five or six choice shoots at the base of the flowering branches of the preceding year. Many-flowered and evergreen Roses which are generally used for covering walls and posts, we must prune back vigorously during the first year, in order to obtain two or three shoots which will grow the length of some 9 ft. or 10 ft., taking care to train them in the right direction. The second year we must shorten them back to within about 3 ft. of their bases, which will cause them to branch out all round. With the third we must begin to cut down the terminal shoots for from 2 ft. to about 2 ft. 8 in., and the sides shoots must be pruned back to three eyes. Climbing Noisette Desprez, Chromatelle, Lamarque, Solferatte, and other Roses of the same class must be cut back to about 6 in. or 1 ft., according to the thickness of the branches, so as to obtain lateral shoots, which will each bear a bunch of flowers at the end. The longest branches must be cut back as the tree gets older, and the young shoots which refuse to bloom must be bent, in order to force them into flower. Banksian, Persian Yellow, and some other Roses bloom on the wood of the previous year; therefore we must

be careful not to interfere with these branches, or, indeed, any others which are likely to bear flowers.

THE SEASON FOR PRUNING.—The time for pruning necessarily varies with the weather and climate. About Paris, for instance, we may prune Hybrid Provence and Moss Roses before winter sets in, but it is much more prudent to wait until March. We begin with the hardest varieties, keeping China and Noisette Roses, and those growing on free stocks, to the last. All these delicate varieties, which should be kept covered up during the winter, should be pruned as soon as the coverings are taken off.

GROWING ROSES IN GARDENS.—The same constant attention must be given to Roses, no matter for what purpose they may be grown, whether for the purposes of the amateur or the pro-

fessional horticulturist. The following is a short account of what is required to be done in order to grow Roses with success.

Manure.—Every two years, when the ground is dug up, either in spring or autumn, the soil must be well manured. Cow manure should be used for light, sandy, or calcareous soils, and old night soil, the bottom of manure heaps, and half-rotted stable manure, for heavy and clayey lands.

Suckers and Watery Shoots.—Every time that the ground is dug over, the base of the Rose trees should be carefully examined. The suckers should be cut off below the ground with the pruning knife, and not with the spade, as is often done. When the latter tool is used a stump is always left behind, which will sprout more vigorously than ever. The branches must also be looked after, and all shoots which have made their appearance below the graft, and which would otherwise soon develop into watery shoots, must be removed.

Cockchafer Grubs.—At the time of digging up the beds a sharp out-look must be kept for these and all other destructive larvæ.

Covering with Manure.—A layer of stable manure, from 2 in. to 3 in. thick, spread round the base of the Rose trees, greatly favours their growth. The layer of manure keeps the soil slightly moist, and the earth does not crack, besides which the roots are not exposed to the heat of the sun. The water with which they are watered, and the rain, is retained upon the surface, and gently penetrates the soil. Besides this, the litter, as it decomposes, provides a supply of manure at the very time when the trees are most abundantly absorbing nourishment from the earth. The stable litter for this purpose should be half rotten and mixed with night soil, the bottoms of warm heaps, rotten leaves, and stable litter, taking care to use those substances which are the richest fertilisers for the heaviest lands. The manure should be applied before the hot weather sets in, and after the soil has lost the moisture left in it by the spring rains. This ordinarily takes place about the end of May, or somewhat before or after, according to the climate and nature of the soil. Before applying the manure we must give the ground a good hoeing, and the beds and borders should be well weeded. These operations should, if possible, be performed immediately after a slight shower of rain.

REPLACING DEAD SUBJECTS.—**LEAF-PRUNING.**—Both the horticulturist and the amateur have an equal interest in replacing dead Rose trees as soon as possible, for which purpose we are often obliged to transplant subjects before the proper time, in fact, while the sap is in the trees. In such cases great care must be taken to strip the tree to be transplanted of the whole of its leaves, and even of its unripe shoots. Without this precaution the branches would become wrinkled and the leaves would continue to waste the sap by evaporation, the roots being unable to supply its place by absorption. If the Rose has to be moved and cannot be transplanted to its proper place at once, it must be belaid in by the heels and watered once or twice a week in order to restore the wrinkled rind to its proper condition. The operation of leaf-pruning should be performed not only when an isolated Rose tree is transplanted, but also in the autumn, when professional horticulturists, in order to satisfy the wishes of their customers, are obliged to take Roses out of their beds before the sap has ceased to flow. Leaf-pruning thus becomes an important operation, which not only saves the plant and insures its taking root, but allows it to be transplanted under favourable circumstances, because, as the trees are placed in the ground at the beginning of autumn, they have time to grow a little and to become firmly established before cold weather sets in.

PACKING ROSE TREES.—When the distance the trees are to travel is small we need do nothing more than moisten the roots and grafts, wrapping the whole round with a thick layer of straw and tying with Willow twigs. If, however, the distance be great, we double the packing of straw and cover it with a piece of oilcloth secured with twine. If the Rose trees are to travel by sea we must first dip their roots in a mixture made of equal parts of light earth and cow manure, mixed with sufficient water to form a thin cream. They are then allowed to dry and packed in boxes, being separated from each other by layers of dry Moss. If we have to deal with Roses in pots they must be unpotted and the ball surrounded with a layer of Moss, kept in its place by string; they are then packed in wooden boxes or osier baskets, according to the distance which they have to travel, care being taken to separate them from each other by layers of dry Moss.

SUMMER PRUNING.—As soon as the Rose trees have ceased to bear flowers we cut off the branches which have produced them, taking care to preserve the neighbouring buds. In those varieties which have only one flower at the end of each branch we cut it down to within a couple of eyes of the flower stalk; we also cut down the watery shoots which project beyond the branches to one-half their length in order to force them to ramify and bear flowers. This operation should be performed



Fig. 25.—Pruning.

professional horticulturist. The following is a short account of what is required to be done in order to grow Roses with success.

Manure.—Every two years, when the ground is dug up, either in spring or autumn, the soil must be well manured. Cow manure should be used for light, sandy, or calcareous soils, and old night soil, the bottom of manure heaps, and half-rotted stable manure, for heavy and clayey lands.

Suckers and Watery Shoots.—Every time that the ground is dug over, the base of the Rose trees should be carefully examined. The suckers should be cut off below the ground with the pruning knife, and not with the spade, as is often done. When the latter tool is used a stump is always left behind, which will sprout more vigorously than ever. The

gradually and continuously, and should begin with the fading of the first Rose until the tree has ceased to flower. When this has taken place a general pruning is given to the trees by cutting back all the healthy shoots which have borne flowers to a well-formed eye, the first below the flower if possible. All weak branches and shoots which have not borne flowers must be cut down, as they would only cause a loss of sap. The pruned shoots will soon have the full benefit of the sap, and will yield another crop of flowers not less beautiful or abundant than the first. This general pruning is a very important operation for varieties whose branches spread far and wide, such as Tea-scented, Noisette and Hybrid Roses.

TRAINING STICKS FOR ROSES.—The stems of the Rose trees are kept in their places by training sticks, which are especially necessary where the trees are much exposed to the wind. It is not only the breaking of the stems that we must guard against, but we must take care that no infiltration of water takes place at the root of the trees through the gap caused between the lower part of the stem and the soil, through the stems swaying about in the wind. Such crevices only form so many funnels for collecting the rain and conveying it to the roots in too great quantities. The training sticks may be replaced by iron rods or tubes of 1 in. in diameter, covered with three coats of common green paint. Slate supports have lately been introduced by the owners of the Angers slate quarries; they are excellent for the purpose but are rather heavy and liable to break. The supports most generally in use are made of wood; they are easily procured, and may be made to last practically for ever by soaking them in a solution of blue stone (sulphate of copper) or by giving them a coat of tar. To prepare training sticks in the first way, we dissolve 2 lbs. of ordinary blue stone—blue vitriol, or sulphate of copper as it is often called—in 5 gallons of hot water. When dissolved, the solution should be poured into a tub of sufficient depth to take the supports, which should be entirely immersed in an upright position for a week or ten days, at the end of which time they should be placed the reverse way for the same period, after which they may be taken out and dried, and used at once or stored away. Sulphate of copper may be bought at any oilman's or chemist's in small quantities, at 6d. or ed. per lb. If a second batch is to be prepared, more solution, of the strength indicated above, must be added to the old; the solution does not become weaker by use, but is diminished by the absorptive powers of the sticks. It is almost unnecessary to add that sulphate of copper is a violent poison. The tar is applied with a hand paint brush, either hot or cold, according to circumstances. The tar generally takes a long time to dry, and there is always a danger of soiling one's fingers and clothes with it until it does, and even after it is dry to all appearance, a day's sun will be sufficient to melt it again. Paraffin oil applied with a brush is also used for this purpose, but it has a penetrating odour that to most persons is extremely disagreeable. Training sticks prepared according to either of the processes described above, have the advantage of protecting the Rose trees from the attacks of certain insects. With the same view it is a good plan to soak all tying material in the sulphate of copper solution. The position of the training stick is a matter of indifference, it is, however, generally placed upright and as close to the stem of the Rose tree as possible, so as to be out of sight. The stem of the Rose tree is kept in its place by two or three pieces of Willow, or other tying material, care being taken to interpose a thick pad of Moss between the stem and the support. J. LACHAUME.

level with the walk in question, from which their fall beauty when in flower can be seen. The plants, of which there are many hundreds, are not planted too thickly; they embrace all the best kinds known in cultivation, and when in full bloom the effect from the terrace walk just alluded to, as well as from the windows of the mansion must be fine indeed.—S.

NOTES FROM KEW.

Stove Plants.—Amongst these we notice a charming Amaryllidaceous bulbous plant named *Ureocalia pendula* (syn. *Ureocalia aurea*), introduced a few years ago by Messrs. Veitch from the Andes, where it was discovered growing in woods at a considerable elevation. It forms a globose bulb, which throws up a stout flower stalk, terminated by an umbel of from six to twelve blossoms borne on slender, drooping pedicels. In form they resemble an inverted pitcher about 2 in. long, and in colour they are of a rich yellow on the outside, gradually merging into the deep green at the mouth, the divisions of which are bordered with white. One detracting point is that the flowers are unaccompanied by leaves, at least in the Kew specimen, but, even as it is, it requires only to be seen to be appreciated. The majority of the showiest Bromeliads exhibit in their floral beauty a strange contrast of colour, and, notably, the superb *Billbergia pallescens* and *Liboniana*, the former with the flowering axis clothed with deep pink, pointed bracts, accompanied by yellowish-green narrow blossoms; the latter with the flowers of various shades of purple, and the flower leaves rich carmine. The variety, called *picta*, of the old bulbous *Tillandsia* (*T. bulbosa*) is superior to the type, on account of the upper leaves changing to a bright flesh colour; the blossoms are also of the same colour.

Orchids.—The most conspicuous amongst these include the rare little Brazilian *Trichocentrum tigrinum*, a small specimen attached to a block and bearing a solitary flower, which is about 1½ in. across, with a rather large bilobed lip, two-thirds white, with a magenta blotch on each of the golden crests; the other segments are greenish banded with chocolate, and exhale a delightful aromatic fragrance. It is a bulbless kind, with thick, pointed leaves marked with dark spots. The various kinds of *Phalenopsis* are certainly amongst the loveliest of all Orchidaceous plants, and here we find flowering examples of several of them, amongst which may be named *P. amabilis*, with its delicate white blossoms; and *P. Schilleriana*, with deep rose-coloured flowers, in addition to the handsomely marbled spreading foliage; whilst a smaller-flowered kind, *P. rosea* (syn. *P. equestris*) has pale pink blossoms with a darker lip copiously spotted with orange, and the whole flower strikingly resembling a bird in the act of alighting. All the above are natives of Manila. Two superb varieties of the spotted *Saccolabium* (*S. guttatum*) are *violaceum* and *gigantum*; the former with dense, pendulous racemes of waxy white blossoms profusely spotted with purple; the latter with larger flowers, broader segments of thicker texture, and fewer spots; both yield a delicious perfume. *Oncidium serratum* is one of the finest of the small-lipped section of the genus; the flowers are nearly 3 in. long, with a roundish upper segment of a rich chocolate colour, the two lower being long and narrow and of the same colour, the other pair united and one half of a pale yellow; the lip is very inconspicuous. It is a native of Peru, and deserves a place in every collection. A fine example of that little gem *Sophranitis grandiflora* is still producing its brilliant scarlet blossoms.

Greenhouse Plants.—One of the most pleasing shrubs which we have seen for some time, though by no means novel, is the Glandular-leaved Anopterus (*A. glandulosa*). In its native habitat, which is Tasmania, it forms a bush from 2 ft. to 3 ft. high with leaves from 4 in. to 6 in. long, leathery in texture, and coarsely toothed in the upper half. The blossoms are borne in short dense racemes, terminating the branches in clusters; they are ½ in. across, pure white, with a faint dash of pink on the outside, and they continue for a long period in good condition. The membranous flower leaves are covered with glands; hence its name. Probably, in some of the most favoured localities in the southern counties, it will thrive in the open air with the protection of a wall. The Lance-leaved *Leucopogon* (*L. lanceolatus*) is another neat shrub from the adjoining country of New South Wales, found abundantly in the vicinity of the Blue Mountains, where it forms large shrubs many feet in height. The plant at Kew is literally covered with blossoms, which are produced in clusters at the tips of every branch, and intermingled with the narrow light green foliage. The individual flower is very small, pure white, and the petals beautifully fringed. Being admirably suited for cutting, it should be found in every collection; and the same may be said of that lovely old favourite the Japanese Iris (*I. japonica*—syns., *I. flabriata* and *chinesis*), which is a remarkably free-flowering kind when under greenhouse culture, forming handsome specimens with graceful

Situations for Rose Gardens.—The Rose garden at The Poles, Ware, is one which shows to how much better advantage Roses may be seen by planting them in suitable situations than by placing them, as is frequently done, in long lines by the side of walks or in isolated clumps. This applies chiefly to standards when planted on a level with walks or on raised borders, for when so situated the naked stems and the undersides of the leaves and blooms are chiefly visible, and the true beauty of the Roses is, to a great extent, lost. At The Poles, the Rose garden occupies a position some 3 ft. or 4 ft. below a long terrace wall supported by a wall clad with Tea Roses and Clematises. The tops of standard Rose trees thus situated are nearly

arching foliage, and throwing up many stems, branched at the apices, bearing blossoms 2½ in. across, with the segments—not, as in the majority of Irises, the outer erect and the inner drooping, on the contrary, they are all on the same plane, thereby enhancing their attractiveness. The colour is a delicate mauve, marked with spots of a darker hue; the three larger segments have rich yellow blotches, and the margins of them are delicately fringed. The variety magnifica of the well-known, long-leaved *Acacia* (*A. longifolia*) is a decided improvement on the species. The bright yellow slender cones of blossoms, formed in the axils of the deep green leaves, render it very desirable for associating with the larger subjects of the conservatory. *Lemnaceae* *Monochæta* (*M. Lemnaceum*), a very profuse flowering kind, is particularly noteworthy. It grows nearly 3 ft. high, and has small foliage, which is almost hidden by the numerous deep rose blossoms, 1 in. across, with a tuft of singular horn-like stamens in the centre. W.

NOTES OF THE WEEK.

Hæmanthus albo-maculatus.—This is flowering just now in quantity in the Pine-apple Nursery. It is an excellent plant for both winter and summer decoration, as under good treatment it blossoms twice yearly. Its leaves, which are long and broad, are of a bright green colour, effectively spotted with white, whilst its flowers are pure white, and the stamens golden.

Cyclamens at Holloway.—Nowhere have we seen the improvement which has been effected in the varieties of the *Cyclamen* better exhibited than in the Victoria Nurseries, Holloway. At present there are large numbers of plants there in full beauty, the flowers of which are large, and in brilliancy of colour are unsurpassed by any with which we have hitherto met.

Choisya ternata in the Greenhouse.—In addition to this being a desirable plant for outdoor culture on walls, &c., it is also worth attention as a pot plant in the greenhouse, where it flowers freely in February and March. Plants of it are now coming into blossom in one of the houses in the Pine-apple Nursery.

Gilbert's Double Primulas.—Our readers will doubtless be glad to know that the new kinds of double Chinese *Primulas* shown on several occasions by Mr. Gilbert, of Barchley, at South Kensington, and to most of which first-class certificates have been awarded, are to be distributed in Aug. next by Messrs. Osborn, of Fulham. Amongst the kinds to be distributed are *White Lady*, white, tinged with violet; *Mrs. Barron*, white, suffused with purple; *Princess*, white, striped and spotted with crimson; *Lord Beaconsfield*, red; and others equally attractive.

Hardiness of Todea superba.—Plants of this filmy Fern growing in an unheated house for some time past in the Pine-apple Nursery, have withstood the past severe weather without any protection whatever except that afforded by the glass. They still remain in robust health, notwithstanding that 14° of frost have been registered in the house which they occupy. This at once does away with the notion that filmy Ferns require coddling in glass cases or under bell glasses, or that in order to grow them successfully heated structures must be purposely provided for them.

Orchids at Holloway.—Even during this unfavourable weather there is a good display of Orchids in Mr. Williams' nursery at Holloway. Amongst others we noticed large specimens of the well-known *Cologne cristata*, furnished with multitudes of snowy-white blossoms, *Calanthes*, the brilliant *Sophronitis coccinea* and *grandiflora*, and the rare and beautiful *S. violacea*. A specimen of *Phalsopsis Schilleriana*, producing two branching spikes 3 ft. or 4 ft. long, is furnished with nearly 200 flower buds, which will soon be expanded, and *P. amabilis*, in the same house, is in full bloom. There is also a good display of the ivory-white flowers of *Angræcum sesquipedale*. Being tastefully arranged among Ferns, Grasses, and other fine foliaged plants, the flowers of the Orchids are set off to the best advantage, rendering the houses in which they are kept most attractive.

Prizes for Vegetables.—At Messrs. Webb & Sons' root show, to be held at Curzon Hall, Birmingham, in November next, nearly £500 are offered in prizes for vegetables and Potatoes as follow:—The best collection of eight distinct varieties of vegetables, four specimens of each, £5, £3, £2, £1; Webbs' improved Banbury Onion, twelve specimens, £1, 10s., 6s.; Parsnip, twelve best roots, 10s., 7s. 6d., 5s.; long Red Carrot, twelve roots, 10s., 7s. 6d., 5s.; short Red Carrot, twelve roots, 10s., 7s. 6d., 5s.; best collection of twelve varieties of Potatoes, twelve tubers of each, £5, £3, £2, £1; Webbs' im-

proved Schoolmaster Potato, twenty-four tubers, £2, £1, 10s., 5s.; Webbs' improved Magnum Bonum Potato, twenty-four tubers, £2, £1, 10s., 5s.

Prizes for Early Peas.—With reference to Messrs. Suttons' prizes for early Peas, we are requested to state that in consequence of the continued severe weather impeding gardening operations, Messrs. Sutton have withdrawn the restriction as to the early Peas to be competed for at the Royal Horticultural Society's summer show being grown in the open ground, and that intending competitors may grow their specimens in any way best calculated to produce well-filled pods.

Crotons Prince of Wales and Williams.—Among the many old and new Crotons to be found in the Holloway Nurseries none are at the present time equal in appearance to those just named. Their leaves are of the richest shades of colour, and, unlike Crotons generally, are equally bright now as at other seasons.

Asparagus decumbens.—This most graceful Asparagus, sent to us a short time ago by Mr. Vertegans, of Birmingham, in fruit, has recently been sent to us in flower by Messrs. Rodger, McClelland & Co., of Newry. Its flowers are deliciously scented.

Christmas Roses.—The common Christmas Rose is largely grown in 6-in. and 8-in. pots in Messrs. Osborn's nurseries at Fulham. Its flowers are in great request for bouquet making, and plants of it flowered as we here find them, are very handsome in the conservatory, far more so, indeed, than when grown in larger-sized pots.

Pitcher Plants, Crotons, and Palms.—Few of the houses in the Victoria Nurseries are more effective than one which is filled with vigorous young Crotons, and graceful plants of *Coccoloba Weddelliana*, over which are hung *Nepenthes* furnished with numerous healthy pitchers. The same house also contains some fine plants of *Sarracenia purpurea*.

Andromeda calyculata.—Though hardy, this plant is very effective in the conservatory in winter. It forces readily, and bears a profusion of small, white, waxy, Lily of the Valley-like blossoms, which are useful in a cut state. Its greatest drawback is its brownish foliage, against which its flowers cannot be seen to such advantage as they would be against green leaves. We find it well in flower at the present time in Messrs. Henderson's nursery.

The Arcades at South Kensington.—It is reported that the commissioners of the exhibition of 1881 propose to convert the arcades in the Royal Horticultural Gardens into a permanent market for the sale of fruit, flowers, and choice vegetables. These arcades have glass frontages to the gardens, and are paved and heated. They will be apportioned according as may seem necessary and they will be open to the public free. Should this scheme be carried into effect, it may prove of advantage to the public and by no means detrimental to the Royal Horticultural Society.

National Rose Society.—A meeting of the general committee of this Society was held at the rooms of the Horticultural Club on Wednesday last, Mr. R. G. N. Baker, of Heavitree, Exeter, in the chair. There was a full attendance, and various parts of the country were represented. The schedules for the Crystal Palace and Manchester exhibitions were finally arranged, some slight alterations having been made. Messrs. T. Francis Rivers, J. Barnaby Atkins, and Arthur G. Soames were elected members of the executive committee; drawings for a die for the Society's medal were submitted and approved; and it was considered that the best way of increasing the number of members would be to obtain the services of some more local secretaries. Birmingham was suggested as a desirable and probable place of meeting for the provincial show in 1880.

"The California Horticulturist."—Our correspondent, Mr. Charles H. Shinn, became the editor of "The California Horticulturist" on Jan. 1 of this year. Mr. Shinn is well acquainted with the needs of Horticulture on the Pacific coast. In no country that we know of has horticulture made such rapid progress as it has done there; there are now many beautiful gardens in that country, while, about the time of the first London exhibition, there was not even one.

New Flowers and Vegetables.—Messrs. Carter & Co., High Holborn, have issued in a convenient form an illustrated catalogue of new and choice vegetable and flower seeds for the present year. Amongst them are new Peas, Cucumbers, and Melons, the beautiful double *Eschscholtzia*, choice strains of *Balsams*, *Calceolarias*, *Primulas*, and similar plants.

Lachenalia quadricolor.—This, though seldom seen, is one of the prettiest of the *Lachenalias*. Other varieties are often thus named, but the true kind appears to be scarce. It is now flowering in some of the nurseries about London. Its blossoms are reddish-orange, tipped with bright purple.

GARDENING FOR THE WEEK.

Stoves.

Preparation for Potting.—It is now time to see about potting some of the earliest started stove plants, and soil should at once be prepared. In all cases not only ought it to be in a medium condition as to moisture—that is, neither too weak nor too dry—but it is a matter of great importance that previous to use it should be so warmed as to bring it up to something like the temperature of the house in which the plants are growing, for to place a body of cold material, in the way in which it is frequently done, in contact with the roots, has a most injurious and stagnating influence on them. Where there has happened to be a flue running for some length in a horizontal direction from the boilers, I have used this whereon to warm a good body of peat, loam, and sand ready for use, and if the material be too wet, such a place is very suitable for drying it; but in thus preparing soil, great care should be taken that it is not overdried, as experience points to the fact, that when soil is placed in close proximity to a heated surface whereby it becomes too dry, the essential elements of fertility are dissipated. To look thus narrowly at what might be termed by many trivial matters, may seem unnecessary, yet it is attention to small details of this kind that makes the difference between complete or partial success. Where no convenient place of the above description exists for warming the soil, it may be put into boxes and placed over the hot-water pipes. If a calculation be now made as to something like the quantity of peat and loam that will be needed during the next month or two in the repotting, it can with advantage be at once so far prepared by breaking it up with the hand, not sifting it, and reducing it to different sizes, in proportion to the large or smaller description of plants that require shifting.

Alcacias.—Those of the *A. metallica*, *Veitohi* and *Lowi* section do much the best in very light material, using nothing but fibre, with the earthy portion of the peat removed, mixed with about two-fifths of chopped Sphagnum to, say, a sixth part of rotten, dry, flaky manure, such as may have been used for summer mulching. A vine border or wherever it would be similarly exposed to like drying influences of sun and air; to this should be added a good proportion of sand and a liberal sprinkling of pot shreds and charcoal. In a mixture of this sort these plants will grow and increase to an extent not possible in ordinary potting material. They are much better wholly, or almost wholly, shaken out so as to get the old soil entirely away from them. It is best, also, in repotting to take the small crowns and offsets away, keeping the stronger growths by themselves and treating the weaker ones in like manner. They are very shallow rooters, consequently, the pots should be half filled with drainage, similar in this respect to Orchids. *A. Jenningsi* is one of the most beautiful of the small-leaved kinds; it will do well in material such as the above, putting either a number of the crowns together in shallow pots or pans, or in the shape of small plants for placing about amongst the other occupants of the stove. *A. macrohiza variegata*, although from the quickness with which it may be increased, is not thought so much of as some of the scarcer kinds of recent introduction, it is one of the handsomest and most effective plants which we possess. In the matter of soil it requires to be quite differently treated from the others; it is hardly possible to make the material in which it grows too rich; one-half yellow loam to an equal proportion of thoroughly rotten, dry manure, and one-sixth sand, will in every way suit it. In selecting young offsets of this *Alcacia*, those should be chosen that have somewhere near an equal proportion of green and white in their leaves; suckers with too great a preponderance of white are deficient in vitality to grow freely, whilst, on the other hand, those that contain too much green in their early stages seldom attain colour enough to make them attractive.

Caladiums.—It is desirable to start these at two different times, by which means a portion may be had late in the autumn, with handsome, healthy foliage, at a time when the earliest grown plants have lost their colour. In potting, it is well to consider whether large or small examples will be the most useful, for in no case is it advisable to over-crowd the pots, as, where this occurs, the leaves will not acquire their wonted size. They will succeed in either loam or peat, but I have found the foliage to possess more substance when grown in loam than in peat.

Poinsettias.—Plants of these that have done flowering should receive no more water at present; they should be stowed away in any place where there is an intermediate temperature for some time, until they require to be started again into growth.

Ardisias are most useful when comparatively small and fully furnished with leaves to the base. Any that are getting too large and that have lost their lower foliage should now be headed down and

put into a brisk heat, where they will at once make several shoots. When these have attained a few inches in length all but one can be taken off with a heel and struck. They will make good small plants much quicker than seedlings. The stools may then be partially shaken out, repotted, and grown on with a single stem, a way in which they look much the best.

Miscellaneous Plants.—Plants of the handsome *Apelandra cristata* that flowered last autumn should now be kept in the stove to encourage their making young growth for purposes of propagation. Of *Eranthemum pulchellum*, *Plumbago rosea*, *Scutellaria Mociniana*, *Sericophoria Ghiesbreghtiana*, and *Thyracanthus rutians*, a sufficient number of such as have done blooming should be cut back and placed in the stove, where they will be induced to make growth for cuttings. They should have plenty of light, so that the young shoots may be short and stocky, as upon that very much depends their making stout, healthy plants for blooming next autumn. After the first flowering of *Euphorbia jacquiniæflora* is over it will, if kept sufficiently warm, make a second growth that will bloom, and, although the sprays will not be so large as the first, they will be useful for cutting.

Forcing Pit.

Amaryllises, &c.—Where a good stock of these is grown it will be better to have them in succession than in bloom all together. A few of those that completed their growth earliest in the autumn, more particularly the deciduous species, if now subjected to a brisk heat, will push up their flowers quickly. The soil should receive a good soaking of tepid water, or, if the plants be plunged in a moist bottom-heat, and water be supplied in the usual way, it will be sufficient. Plants of *Eucharis amazonica* that have been rested with a view to coming into flower after those earlier started should be brought into the warmest end of the house, and, if possible, plunged in bottom-heat, and, if they are strong and in good condition, they will at once push into bloom. *Imantophyllum*, although more correctly greenhouse subjects, are very effective for general decoration brought into flower earlier than usual by the application of more heat. A few weeks at the coolest end of the forcing pit will bring them on.

Orchids.

Those about to commence the growth of cool Orchids often ask the question what is the best aspect for them. If we take into account the advantage that arises from being able to prevent the temperature running very high in hot summer weather, which is a desideratum I think, there can be no question that a lean-to house with a northern aspect is the best, for, in that case, a thinner shade will suffice when such is required, and an absence of any for a considerable portion of the day, when its presence is needed with houses more under the direct influence of the sun. With Orchids, as with all other plants, the less necessity for shading, the better, but in erecting a house of this description on this aspect, it should by no means be put up to a high building, which necessarily intercepts a very considerable amount of light. I make this remark from frequently seeing a structure of this kind, to accommodate a quantity of costly plants, erected in some position that offered a slight saving as regards first cost, but, taking the value of the plants sacrificed into consideration, the loss in a few years was ten times the amount of the saving in the first instance. The greater portion of the spring and early summer-blooming *Odontoglossums* will now be pushing up their flowers, and continuous watchfulness will be necessary to see that these do not become a prey to slugs or cockroaches; the latter are not usually so troublesome here as in the warmer quarters afforded by the hotter houses, where they increase faster and find more congenial hiding places, but the slugs and snails need to be unremittingly sought after, for, even if destroyed until there is no trace of any remaining, there are others that soon find their way into the houses, come into existence from eggs already deposited there, or that get in with the potting or other material from time to time introduced. Such species as *O. coccinum*, *O. hastulatum*, *O. Phalaenopsis*, *O. vexillarium*, and *O. Roezlii* will need keeping in a warmer position than the least heat-requiring kinds. *Masdevallias* which have not yet completed their growth, must have sufficient water to keep their roots thoroughly moist, for their requirements in respect to moisture are almost equal to those of real aquatics, and, provided the material in which they are grown is of a nature to allow the water to pass freely through it, the growths are generally finest where the most water is used. I well recollect when *Epidendrum vitellinum* was looked upon as so difficult to manage that few people found it possible to preserve it in a healthy flowering condition for any length of time through the fact of its being grown too warm, but, grown in a temperature suitable for the majority of *Odontoglossums*, little difficulty is experienced with it. Its long, persistent, highly-coloured flowers afford such a pleasing contrast to the light tints possessed by most of the other occupants of the house as to make it desirable

to have a number. The beautiful *Lælia majalis* and *L. albidia* will do well at the warmest end of the cool house.

Preparation for Potting.—It will be well now to see that all material for potting the many plants that will shortly require it is in readiness, by which means the operation will be got through much quicker.—T. BAINES.

Flower Garden.

Auriculas.—Continued severe frost prevents anything being done to these at present; the frames are covered at night with mats, and this must be done every night while frost remains. I have been reading in an old magazine devoted to florists' flowers that all trusses formed about this time should be pinched off, and a horticultural writer recently recommended this to be done even later. In this the old growers were mistaken, for, as a rule, the earliest-formed trusses produce the most perfect blooms. If the trusses of some sorts, such as Lancashire Hero, George Lightbody, Smiling Beauty, Glory (Taylor's), &c., can be seen well down in the axil of one of the lower leaves, even in November, such trusses come on slowly, and are usually perfectly developed. A centre truss with a stem formed at that time must be pinched out. Those who have a heated greenhouse in which to place their plants have a great advantage over those who can only obtain ordinary frames. They ought to be placed in the house this week, and frosts should be excluded.

Carnations and Picotees.—It ought to be well known that these do not seem to be in a dormant state, even at mid-winter. If the weather be mild they make roots and slowly develop leaves. During frosts so intense as to crust the soil in the pots growth either above or below ground must be suspended. Growers of these flowers do not give them that amount of attention which they require during the winter months, and which is especially necessary in February; the plants sometimes begin to spindly for bloom the first week in this month; these will be early blooms, and, if the weather be mild, such plants should be carefully repotted into their blooming pots. The main collection will not be ready for potting until the end of the month. I like to have all the plants thoroughly cleaned before potting them; dead and decaying leaves are unsightly, and must be carefully removed; even in the best-managed collections they are to be found. If sparrows are numerous and short of other food they will peck the tender points out of the plants; if so, it will be necessary to place a net over them as the best precaution. No trace of aphides should be allowed on the plants at this date; it is very dangerous to fumigate the frames after active growth has commenced.

Dahlias.—If a large stock is required the roots must now be placed in heat after they have either been potted singly, or a number of roots placed together in suitable boxes. The best place is a forcing house, where the temperature ranges from 50° to 55° at night. They may be placed over the pipes in Vineries or Peach houses, and be started with them. The shoots start well and healthily over a bed of leaves or tan with just a mild heat.

Hollyhocks.—Instructions for the propagation of these were given last week. See that leaves on plants placed in heated houses do not become infested with red spider; injury is often caused by it before the discovery is made. Seedling or common sorts that were planted out in the autumn must not be quite neglected. If the plants have been mulched round the roots, this forms a safe hiding place for slugs, which will eat the leaves, and it is also very desirable to run the hoe through the ground if it is moderately dry. While frosts last nothing can be done.

Phloxes in Pots.—I would strongly urge the importance of starting the shoots into growth in order to obtain early cuttings. The heat of a greenhouse will cause a very early growth. Shoots about 1 in. long may be slipped off and placed singly in very small pots. They will soon form roots, and grow away freely with a little bottom heat. Those in beds cannot require any attention until the weather is more favourable.

Pyrethrums, Delphiniums, &c., in beds, will be putting forth their very tender leaves as soon as the frost will allow them. See that they do not receive any injury from birds. The plants may be lifted and divided if it be necessary to increase the plants.

Polyanthuses.—As a rule, the treatment recommended for Auriculas applies to these. The trusses on our plants may now be seen rising slowly from the centre, where one truss is generally formed, and two or three more round it. We would remove this class of plants to a cool greenhouse near the glass if it were possible to find room for them. The soil in the pots has been frozen for a considerable time now, but the flowers are most injured by birds in this early stage of development.—J. DOUGLAS.

Hardy Fruit.

The prolonged severity of the weather and consequent scarcity of food for the feathered tribe are already causing them to attack the more advanced buds of Gooseberries, Plums, and Apricots. At present, for some unexplained reason, sparrows are the greatest delinquents, and we have had, much against our will, to resort to the most effectual way of getting rid of them, that is, shooting them. Apparently the buds are not yet plump enough for bullfinches, for, though they alight on the bushes and search diligently they generally fly away with a disappointed twitler. The excessive preservation of bullfinches, sparrows, tomits, thrushes, and blackbirds may be all very well so far as naturalists are concerned, but the cultivator who is expected to produce fruit must, in self defence, shoot some in order to deter others. We had last year a couple of dozen of fine young Plum trees, that were one mass of blossom buds, entirely denuded of them in about a couple of days by bullfinches, and yet, forsooth, we are asked to spare "our feathered friends." Unfortunately for the birds we say shoot them in order to decrease the chance of a fruit crop. We shall now probably have a genial spring, and when once the frost releases his grasp vegetation will make rapid progress; it is therefore important that all pruning should be completed as soon as possible, for, to say the least, it seems unnatural to prune when the buds are expanding, and such an operation carried on then must tend, in some degree, to produce constitutional derangement. As regards neglected orchard trees, many would be the better for having their root and stem suckers removed, cankered branches cut off, and other branches thinned out, together with any long spurs, in order that the trees may have a chance of renewing their vigour by the production of new wood; any trees that are affected with Moss or Lichen should be splashed over with a mixture of soot and lime, a simple but sure remedy. A liberal surface dressing of either fresh soil or manure should afterwards be given, and even the first season the fruit will be so improved as to well repay the outlay. Autumnal planting of fruit trees is always preferable, but rain and frost having hindered this, let all be in readiness for doing such work as soon as a change occurs and the state of the soil permits; planting when the soil is in a sudden state is ruinous, no matter how well drained the soil may be. For obvious reasons, in stiff or clayey soils the plants should be raised a few inches above the ground line, but in light or gravelly soils they are best planted on the level, care being taken that in neither case the stems are buried too deeply.—W. W.

Kitchen Garden.

All other things being equal, a well-drained and deeply-trenched garden will yield double the produce of an undrained and badly-cultivated one. The first neither suffers from wet nor drought. The crops can be got in at the proper time, and they require but little cultural attention afterwards, and that little is the more expeditiously accomplished owing to the workable state of the soil in almost all weathers, consequently the crops are finer and earlier matured, whilst, in a garden of an opposite character, seed sowing has to be deferred through the unkind state of the soil, and this late sowing, coupled with the slow progress made by reason of the water-logged ground, and the difficulties of culture through the ground getting hard and baked by the first dry weather, tends to show the economy there is in deep trenching and effective draining, a large proportion of which may be done in weather when it is not practicable to do aught else. No excuse should be attempted for the neglect of such a duty, moreover, an earnest determination to accomplish it will bring its own reward in the form of assured success. We are still frozen out, but a change seems imminent, and as soon as it occurs, and the ground can be worked, seed sowing should proceed with despatch. After a few early Peas, Beans, and Carrots have been got in on a warm border, space for the main crops of Onions and Parsnips will require attention; both of these flourish best if sown as early in February as circumstances permit. Drill culture is greatly preferable to sowing broadcast for all kinds of kitchen garden crops. The space apart of the drills for Onions should be at least 12 in., and for Parsnips 15 in. The ground for Onions cannot be too highly manured or deeply trenched, but previous to sowing it should be rolled to make the surface firm. Parsnips, on the other hand, cannot have the soil too open, and the manure for these should be buried rather deeply, for no matter how much so they will search it out. Surface manuring for these has a tendency to the production of forked or malformed roots, so that it is better not to manure at all in soils of good or medium quality than to have it immediately under the top soil. The November-sown Peas have had a wretched time of it, and look so miserable that it becomes a question as to whether they should be allowed to occupy the ground any longer; should the decision be in their favour, take every precaution to guard them from cutting winds by protecting them with Spruce branches, and from sparrows by netting. Fill up gaps in the early Cabbage plantation, press the

soil about those that the frost has loosened, and as Broccoli has suffered so severely, plant any spare space there may be with plants from the reserve stock. Every bit of green food will be wanted before spring Cauliflowers turn in, and these early-planted Cabbages will prove no mean substitute for Broccoli. Preserve the best piece of ground in the garden for Brussels Sprouts; they should be considered puny unless they attain the height of 3 ft., in which case a peck of Sprouts may be expected from each stem. If an autumn sowing were not made, sow a box at once and raise them in heat gradually inuring them to the atmosphere, in order that they may be pricked out at the foot of a south wall as soon as sufficiently large to handle. On every favourable occasion give abundance of air to Cauliflowers in handlights or frames, and the same remark will apply to all salads, Carrots, and Potatoes. See that the seed stock of the latter are laid in single layers only, and, provided frost be excluded, keep the stores as cool as possible, in order that they may develop strong, sturdy shoots. Such sets never fail to produce fine tubers.—W. W.

Avenues.—Where, as is very often the case, avenues form one of the principal features of parks, they should be pruned and thoroughly put into shape, removing all dead wood. Any trees which are broken or so much injured as to spoil their appearance, must be removed without delay, and replaced by such as will best match those in the avenues. In the case of young trees the earliest opportunity should be taken to restake them where necessary, and in every instance the old ties should be cut and new ones made. Neglect of this often costs the head of the tree during the first high wind after the expansion of the foliage, as during the growing season the old ties, if not removed, will cut into the tree. This is especially the case with all rapid-growing trees, as Willows, Poplars, &c. The most useful tying material which has come under my notice is what is termed jute outtings. This should be cut into strips from 4 in. to 8 in. in width, and from 1 ft. to 3 ft. in length, in proportion to the size of the trees. The cutting is bound round the tree, and tied with house-line or tarred cord. The cost of the former is about £1 per hundredweight, and the latter £3 10s. per hundredweight. These materials will be found effective, durable, and handy. Sometimes, indeed, it is very often the case that some trees will be found to be less vigorous than others, and these should have a good mulching of well-rotted manure; neglect of this will detract very much from the general appearance of avenues.

Tree Pruning, Furze Cutting, &c.—This is the best time for lopping trees and cutting down any timber that may not be required to stand. In cutting out large limbs from trees great care must be taken that the under cut is deep enough to prevent the weight of the branch splitting down the trunk of the tree and bringing away portions of it; this is both injurious and unsightly, and exhibits bad workmanship. Furze may be cut down to within a few inches of the ground if it has grown too high, and, if so dense as to prevent free circulation for pedestrians, openings from 20 ft. to 40 ft. in width should be cut through it in easy curves; this will also prevent extensive fires, which frequently occur in hot, dry summers; in this case the roots should be grubbed up and Grass seeds sown upon the surfaces at the proper season. Drainage requires particular attention this month; where the commons are drained principally by means of open ditches, these should be maintained free from obstructions of all kinds. In the majority of instances, however, the only effectual remedy will be to under or pipe drain those portions which are naturally wet. This is a permanent work, and its effect upon swampy areas is truly astonishing. The making of roads and paths where necessary, trenching for future planting, the general regulation of surfaces, sloping down the sides of deep and dangerous pits, &c., may all be carried on this month. The sooner these works are carried out the more satisfactory will be the results.—CHARLES DENNIS, Southwark Park.

Onion Trebons.—This variety was quite new to me last season, but, having obtained a packet of seed of it, it did so well, and proved such a real novelty, that it now must take a permanent place in my vegetable list. With ordinary garden culture the bulbs averaged 12 in. in circumference, many of them being 14 in. It is very handsome, not unlike, both in size and appearance, the imported Spanish Onions. In quality it is super-excellent, having the fullest Onion flavour, and it is deliciously mild. Respecting the origination of it I know nothing other than that the name appears to imply that it is of French origin.—W. W. H.

Early Peas.—Now is the time to sow early kinds of Peas in turf or boxes. If these be placed in any house or pit, from which frost is excluded, and be planted out, when spring sets in they will furnish a crop which will supply the place of those which may have been lost through the severity of the weather.—S.

ANSWERS TO CORRESPONDENTS.

Fuchsia serratifolia.—Allow me to inform Mr. Johnstone (p. 92) that I grow this Fuchsia, and will be pleased to supply him with a few cuttings for another start if he is anxious to continue its growth. It is well always to keep a few duplicates of such plants in store pots to fill up any vacancies which usually occur after so prolonged a frost as we are experiencing this year.—A. HOSSACK, Ragley, Alcester.

Large-leaved Saxifrage.—Allow me to say in reply to Mr. T. Williams (p. 92) that it was the common London Pride which I had in view when I wrote *Saxifraga oppositifolia*. The London Pride and *S. Germ* are only comparatively large-leaved, but they grow tall, and when they are in good health are really large leaved or have the same effect. Their flat leaves spread out in broad rosettes have a fine effect about the stems of large Lilies, as well as in large patches on the rockery, and neither of them require much root room, as they are surface-rooting plants.—W. D., Dublin.

Insects.—Is the small fly that burrows into the soil and flies about amongst pot plants infested with green fly the winged aphid?—ANON. [It is difficult to answer your question. The winged aphid might fly about, but the burrowing into soil is a puzzle. Cannot you send a specimen of the small fly when something positive might be said about it.—W. W. S.]

Rheum.—I notice an enquiry in your issue of January 11 (p. 48) as to the difference between *Rheum palmatum* var. *tanguticum* (Max.), and *R. officinale*. The leaves of the former are much more deeply cut and of a darker colour. Your correspondent will find a good figure of and of the latter in Regel's "Gartendora" for January 1875, and of the latter in the "Botanical Magazine," December, 1874. The former may be seen growing at Chelsea Botanic Garden, and at the Botanic Gardens Edinburgh; and the latter at Kew and Regent's Park Botanic Gardens.—E. M. HOLMES.

Conservatory Climbers.—It would, perhaps, be impossible to name a more welcome plant than the *Luculia gratissima* which Mr. Culverwell recommends (p. 92); still from the position to be occupied by it it has its drawbacks, one of which is its only flowering for a limited time, and such positions are often expected to be kept gay nearly the whole year round. I would recommend your correspondent to try *Habenaria elegans* planted out in the lateral shoots being allowed to hang naturally. Nothing could be more pleasing, and it flowers quite ten months out of the twelve; moreover, its not being liable to be infested with insects is much in its favour; and, finally, this plant is well adapted for covering a large space in a very short time.—A. HOSSACK, Ragley, Alcester.

Names of Plants.—J. B.—1. *Adiantum Santa Catharinae*; 2. *Kennedy monophylla*; 3. *Alonsoa Warczewiczii*; 4. *Selaginella cesia*. R. H.—*Eranthemum atropurpureum*. John Gordon.—We do not know of any one requiring them.

Transplanting Vines.—I am thinking of moving my Vinery, and wish to know the best time to do so; also if Vines that have been planted six years could be lifted with safety, or would it be best to plant young Vines.—J. R. [When the crop is cleared off the house may be moved, as exposure to the weather will not then injure the Vines. Should sharp weather set in before they can be lifted they may easily be protected by being tied together and covered with hay or Fern. Move them when the weather is open, taking care not to injure the roots during the operation. Shorten back any strong, coarse roots which they may have, plant, and start them gently at once. Allow plenty of growth the following season, and do not crop too heavily. Such Vines in good health now will do good service immediately, whilst young ones planted would require three years to get fairly established. We have lifted Vines twenty years of age in the way described, and with the best results.—S.]

Questions.

Lady's Slippers.—Having found much difficulty in flowering *Cypripedium* insigne in a satisfactory manner, allow me to enquire as to the most approved treatment of this fine old Cypripedium. Some of my friends flower it most abundantly every year, and as I treat my plants in a similar way I am quite at a loss as to the cause of my non success. Can any one help me?—CLITON.

Eucalyptus amygdalina.—Has this been tried in the British Isles? I rather gather from Mr. P. Grieve's remarks (p. 61) that it has not yet been introduced. The temperature at Rome referred to by him, viz., 6° below zero, is evidently measured in Centigrade; this is more frequently met with on the Continent than Fahrenheit; this would make 21°·2 of the latter, I think. Frost to the amount of 38° is quite unknown in Rome; even 11°, as above, are unusual.—J. H. W. T.

Mushrooms in Frozen Beds.—Can any one tell me what prospects there are of a crop of Mushrooms from a bed which I have in an outlying wooden shed. It was spawned on the 25th of October, and by the beginning of December the spawn had worked through the bed in such a manner that I felt sure of a heavy crop. The severe frost prevented all access to the shed until the first slight thaw came when I found there had been 6° of frost inside, and the surface of the bed frozen. The bed was made in the centre of the floor, with space round it for fermenting material, of which there was about ten barrow loads in at the time. I should be glad of information on the subject.—R. N. W.

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SATURDAY, FEBRUARY 8, 1879.

[Vol. XV]

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE TEA-SCENTED ROSE.

(Continued from page 81.)

Then will I raise aloft the milk-white Rose;
With whose sweet scent the air shall be perfumed.

Shakespeare.

THAT philosophic hero, the elder Pliny, immortalised as a scholar and a statesman, as a soldier and a sailor, who had such an appreciation of the value of time that he would dictate to his secretary while putting on his *toga* (in our vulgar parlance "togger"), and was very angry with his nephew, Master Pliny, junior, because he took a walk for the refreshment of his body when he might have been improving his mind—that ardent lover of science who, seeing from his ship, when in command of a fleet, an eruption of Vesuvius, immediately set sail for the scene, and, heedless of warnings, could not be happy until he got himself well into the molten lava and mingled his ashes with those of the mountain—Pliny, the historian, tells us that the land we live in was called Albion, either from the white cliffs, which the sea washed (*ab albis rupibus, quas mare albu*), or from the white Roses with which it abounds (*ab albis rosas quibus abundat*). Be this as it may, the record suggests a beauteous vision to the roseate mind, thickets and hedgerows of the pale wild Rose, untouched by the chopper of model farming, or by the brierman's spade, and, here and there by the infrequent habitations of man, those larger and more double varieties, which were the results of selection and of cultural care. Yes, it is a pleasant thought that 1800 years ago (Pliny died A.D. 79) and doubtless many centuries before, our beloved fatherland was the land of Roses, and that from Cornwall to Cumberland (aye, and far beyond, for who shall dare to doubt that there were Roses in Ayrshire?) these "stars which on earth's firmament do shine," shone in countless beauty like the stars of heaven.

White Roses! Coming back from Scotland to England, and from the first to the fifteenth century, we are reminded, as we linger at York, of the fierce frays fought in England, *ob albas rosas*; and we are glad to move on, by one of those rapid flights of fancy, which make the telegraph a mere tortoise, over 400 years, in two seconds, and to see the white tents raised by the ancient city, on Knavesmiro or Bootham Field, not for scowling warriors, but for smiling dames; not for the coat of mail, iron gauntlet, and dented helm, but for *robes de soie, gants de Paris*, and the last sweet thing in bonnets. A battle, it is true, is fought in those tents; nay, more, a War of the Roses, but there is no weapon more formidable than a thorn, and nothing to remind us of ancient enmities except a Special Prize (offered, so far as I know, at York only) for White Roses.*

White Roses! Off again, in that swift conveyance, which passes the Flying Scotsman and the Flying Dutchman, "as though they were standing still," returning to the place from whence we came, let us diverge, ere we come towards Land's End, to the left, and imagine ourselves at a place and time (the place is Plymouth, and the time some thirty-five years ago), when Devonians, the White Rose of England—not milk-white, but cream-white, *blanc jaunâtre*, as being *crème de la crème*—delighted the eyes and noses of all who could see or smell. Oh! happy Mr. Foster, to foster such a babe! Who would not be a nurseryman, with such a child to nurse? Gardeners, amateur and professional, came in crowds to gaze in sweet amazement, and went home to ask their envious friends kindly to abstain from the subject of Roses in their presence, because it was impossible for persons who had not seen Devonians to know anything whatever about them. Even in Devon, so full of beauty, animate and inanimate, celebrated alike for landscapes and lasses (I

remember a visit in my undergraduate days, and how I fell desperately in love with fourteen peerless belles), even in Devon this Rose was a gem supreme. It is difficult to realise in its most attractive phase, but its very failures charm (how lovely, for example, its small undersized buds, which have been cut from some weakly plant, and they peep amid the Camellias, Eucharis, Pæanietum, and Orange flowers of some vast brilliant bouquet!), and to see it once in the full grandeur of its beauty is a memory for life. Such a consummation is, perhaps, attained most quickly and easily upon the climbing variety of the Rose on a warm wall, or in a Rose house, but of this hereafter. Once thoroughly established, it thrives admirably on the seedling Brier, but I have seen it in its glory before the scendant "sport" or the seedling Brier were known, and I remember a grand box brought to our first National Rose Show in St. James' Hall, from its native country, by Messrs. Veitch, of Exeter, more than twenty years ago.

The honoured name of Veitch (and he who honours it not must know little about beautiful plants) appropriately suggests the next Rose on my list, the Duchess of Edinburgh, introduced by Messrs. Veitch (at a drawing-room of the queen of flowers) in the spring of 1875. The Rose somewhat reminds us of the old Crimson China, and has more of the India than the Odorata in its constitution. It is prettily shaped, and glows with a clear, vivid, carmine—*rouge carmine* as the French catalogues have it, but we in England like not the word *rouge*, except so far as it concerns plate-powder. It is an excellent pot Rose, and may be brought into bloom, by judicious forcing, in the very early spring—I mean in its true character, for I make no count of Roses so drawn and weakened by artificial heat that their own mothers—I mean raisers—would not know them, would not recognise their pale, puny flowers. Out-of-doors, moreover, it is very effective, being one of the few red Roses in the Tea family; one of a trio, in fact, its companions being Aline Sisley and Cheshunt Hybrid, and so by the striking contrast of its colour with the whites and the yellows, the buffs and the pinks around, adding much to the beauty of a bed or border of the lovely Tea-scented Rose. A capital likeness of the Duchess of Edinburgh will be found in the Portrait Gallery of Illustrious Flowers, No. 217, Plate III., which is in the possession, or ought to be, of all who love THE GARDEN.

Homer, by a slight anachronism, comes after the Duchess of Edinburgh, and who deserves so well as he, enthroned three thousand years first king of the poets, a crown of Roses? His namesake has its pale pink petals frequently edged with a deeper rose, crimson tipped, like Burns' Daisy, and like the fingers of Aurora, as Homer himself describes them. And does he not tell us, towards the end of his "Iliad," how when Venus and Apollo would preserve the dead body of Hector from the dogs and from the drought, they could think of nothing so efficacious as the oil of Roses, with which they dressed him accordingly, thus typifying, in a charming allegory, the appreciations which Beauty, and Art, and Poesy, and Valour have ever felt for the Rose. Homer is one of the hardest of the Tea-scented Roses, but I am bound to confess that, although I never could bring myself to believe that the great poet, with all his marvellous powers of description, was blind, his synonym is happiest when near a wall.

To leave the goddess Venus for Isabella Sprunt seems to indicate a want of respect and good taste, and the antithesis has an abrupt and discordant sound; but there is, on reflection, no great incongruity, for both are beautiful. As Shakespeare sang of his beloved Ann Hathaway, "She hath a way," so might Miss Sprunt's accepted lover say of his *fiancée*, "She is-a-belle." Not one of those irresistible Queens of Hearts, who overpower us like Venus, or Catherine Mermet, or Comtesse de Nadaillac, or the Fair Devonian, but pretty and *piquante*, in her *première jeunesse*, that is, in her budhood, in her well-shaped, abundant, pale-yellow buds.

Jean Ducher and Jean Pernet are, as we should expect, Roses of quality. I say in accordance with expectation, because whenever "our lively neighbour, the Gaul," acquires a new Rose, and bestows upon it his own name, or the name of his kinsfolk, or of a French friend, there is, unless parental prejudices have blinded his eyes, a special merit in the flower. Take, for example, Auguste Rigotard, Charles Verdier, Claude

* I see in this year's schedule of prizes, to be given at the Great Yorkshire Gala in June, that yellow Roses may be shown with the white.

Levet, Dupuy Jamain, Etienne Levet, François Lacharme, Hippolyte Jamain, Jean Ducher, Jean Liabaud, Jean Pernet, Jules Margottin, Mesdames Eugénie Verdier, Hippolyte Jamain, Lacharme, Margottin, Thérèse Levet, Victor Verdier, Marie Beaumann, Pierre Notting, and C. Crapelet. I commend this laudable ambition to be associated with that which is beautiful, rejoicing, nevertheless, that Mr. George Paul, of Cheshunt, either did not feel, or resisted, its influence when he immortalised his friend and brother, and gave the name of Reynolds Hole to a Rose which, at the last exhibition of "the National" at Manchester, was the *spécialité* of the show, and might have assumed the proud title which some of us may remember as belonging to one of our old friends, the Gallicas, *Rien ne me surpasse*. Jean Ducher, by some oversight, is not in my collection, but the reliable Rosarians, English and French, are so united in praise that I cannot omit it from my list. Of Jean Pernet I speak from happy experience, as being one of the most beautiful of the Tea Roses, a soft pale yellow in colour, substantial and symmetrical in form. La Boule d'Or (no connection with the golden ball of the pawnbroker) is even yet more attractive, larger, and of a deeper golden-yellow. Never to be forgotten are those glorious blooms, which one of the great champions of Rosedom—Mr. Cant—brought to the National Show last summer in the Palace of Crystal. He says, I see in his last catalogue, of this Rose, that it is "very beautiful when grown under glass," but this must not deter the amateur from planting it among his outdoor Teas, because I have grown it and shown it, in its integrity, from its home in the open. This is more than I can say at present of Letty Coles, the next Rose which comes under our notice, for though I have grown it with the assistance of the glazier, carpenter, potter, pipe and boiler maker, and coal merchant, in a very charming form, a Madame Villermoz, with the centre petals of a rich rosy-purple hue, I have not succeeded in edging *à fresco* the charms which it reveals under glass. Perhaps some more congenial season may "bid her come forth, and suffer herself to be admired" in our gardens. At all events, I must speak her praise, if only in affectionate remembrance of "that good grey head which all men knew"—of John Keynes, under whose auspices Letty Coles made her *début* in the world of Roses; and, to many of us, who often think of him with a sorrowful regret that we shall hear his hearty, honest words no more, it may be a solace to read them, to read again that which he wrote in the Chronicle of the gardener concerning this very Rose.

"Some three or four years ago, from information received, I was induced to go and see a Rose whose characteristics were described to me as something out of the common way. The Rose had bloomed three years in succession, always preserving its special features. I went, I saw, I won my prize, at the expenditure of a large sum of money. My acquisition had four "eyes;" to make sure of them I destroyed the rest of the plant. The sport, for sport it was, was evidently a Tea Rose of unusual merit. On my homeward journey I wrapped my treasure in a piece of newspaper, and placed it by my side on the seat of the railway carriage, together with another travelling companion, my umbrella. Towards the end of the journey, however, I was called into another compartment to speak to a friend, and with him I rode to the end of the journey, some eight miles, leaving my packages behind me. What was my dismay on returning to the carriage I had quitted en route to find neither Rose nor umbrella. Here was a catastrophe! My money sunk, my anticipations blighted, my umbrella vanished, my beautiful Rose annihilated. What could be done? I remembered that I had left two men of very suspicious appearance in the carriage, but I had no idea that in one stage of about eight miles only I could have possibly lost these things. It struck me, however, that these men had my Rose and my umbrella too. The station at which I alighted was contiguous to another on a different line of railway, so I at once hastened to that other, but, alas! I could see no trace of the two men. On proceeding further, however, up in one corner of the station there was the newspaper with the Rose in it safe and sound. The recovery of the Rose emboldened me, and gave me hopes for my umbrella. I was determined, if possible, to regain that also. I waited until the train was ready to start, when, as I expected, my former travelling companions appeared, one of them carrying my umbrella. I speedily regained that also, and my despair was converted into joy. And now let me tell you the name of the Rose—it was Letty Coles. Never was a fine Rose so nearly lost to the lovers of Roses as this flower. I con-

sider it myself wonderful, for had that paper parcel been thrown away the Rose would have perished, and Letty Coles would have been—nowhere. From those four eyes, however, the Rose has been propagated and distributed. It was a sport from Madame Villermoz, and fine flowers will, I trust, be exhibited this year.—*John Keynes, Salisbury, July, 1877.*"

Another incident of a more amusing character I quote from "The Six of Spades" (familiar as that admirable book must be to all well-educated minds): "Gentlemen," he said, when speaking at a large dinner of horticulturalists in London, at which I had the honour to preside, "you are all enthusiastic florists, and you will be pleased to have an example of floral zeal. I knew an exhibitor of Carnations and Picotees, who, in stepping out of his cart at a show, stumbled and broke his leg. He persisted, notwithstanding this fracture, in staging his flowers, and after this he remained for three hours in the vicinity of the building in which the exhibition was held, without consulting a doctor until after the awards of the judge were known."

I need only say that this extraordinary instance of floral worship evoked the astonished admiration of the company; but when the narrator quietly added, as he slowly resumed his seat, "It was a wooden leg, gentlemen," I shall never forget the perplexed expression of his hearers, the momentary indignation resenting the deception, and then the unanimous outburst of mirth.

Alas! I have a letter before me, written by "The touch of a vanished hand" in which he says, "The incident of the leg was a literal fact; the man's name was Strong, and we showed Pinks together near Winchester."

S. REYNOLDS HOLE.

(To be continued.)

THE ROSARIAN'S YEAR BOOK FOR 1879.*

This small quarto, consisting of 80 pages, is a great improvement on that issued last year. It contains original articles written by some of our best known Rose growers. Amongst them are rules for judging, selections of the best Roses, new Roses, and much practical instruction as regards the culture of the Rose, both as a standard and as a dwarf, on its own roots, and on every kind of stock. The following, on Dwarf Roses and their winter management, by the Rev. C. P. Peach, may prove interesting to our readers:—

The winter management and pruning, top dressing, &c., of dwarf Rose trees, necessarily at once raises the question of soil, climate, and character of stock. I confine these remarks almost entirely to dwarfs, because year by year I am more than ever prejudiced (some would say) against standards, but my own observations in my own and friends' gardens, and in those of nurserymen, lead me more decidedly to the conclusion that, except under exceptional circumstances, all standard Roses deteriorate after the third year, and the very method of pruning required to form a symmetrical head, as it is called, militates against the production of first-class blooms. No doubt some of the stronger growers may be made handsome on each side of a walk by being trained down like weepers upon a circular frame of wire, as in that case the weaker wood can be cut out, and only the stronger shoots from the centre tied down, when strong enough to bear it; and, though this is following a system of training contrary to the nature of the Rose, yet I have seen several cases where it has been successful. My experience, however, has been this, that whenever I have looked over a garden with transplanted standards and dwarf standards[†] growing we will say in beds, or up the sides of kitchen garden walks, or as the back and second row of a Rosarium, I have invariably found the greater proportion unsatisfactory. This is, no doubt, in a great measure accounted for from the treatment which the poor Brier stock has to bear, from the time of its being out of a hedgerow by a labourer with a draining spade, then laid in heaps in a shed, then planted in nursery rows; no real attention being given to selecting those that have a fair amount of root, and clean straight stem, and eventually all that push any shoots, whatever are budded, and all that live through this process are sold, and after a second transplanting have further difficulties to meet with; upon these I need not enter. I have, however, another sentence against them in these northern climes, and that is, that in severe weather it is almost impossible to protect them against sudden frosts. In the winter of 1859-60, before I had a taste of what a real Yorkshire frost meant, I lost 98 out of 100 standards I then possessed; and

* "The Rosarian's Year Book for 1879." Edited by the Rev. H. H. Dombrain, London: Broom's & Sons.

though every Rose, with few exceptions, on the Manetti, were killed down to the ground, yet every one came up again from the base in the spring, and before the year was out were re-established. I determined from that time never to trouble myself about standards again, but a friend of mine sent me a dozen a few years afterwards as a present, not one of which survived another frost of a like kind, which came upon us suddenly, after a very open December, on Christmas Eve, when Ivy leaves which I went out to gather for Christmas decoration, snapped off by their stems like pieces of glass; and Oak trees were cracked in damp clay land by the sudden action of the frost before the sap had fairly descended. I owe a grudge too against this same frost, as it killed a *Maréchal Niel* against a south wall, even though it had a glass coping over it at the end of a fruit wall, and was in a sheltered place, and covered a space of wall about 20 ft. long and 9 ft. high. This is a long digression to begin with but I make it in order to say that my remarks apply almost exclusively to dwarfs on the Manetti, which, after proper planting and treatment are virtually established on their own roots. My experience with Manetti stock began before I came into Yorkshire (some 24 years ago), and while I was in Nottinghamshire on a light red loam, rather sandy, but still deep, and a good soil, especially for evergreens, as Hollies, Rhododendrons, &c. In planting a garden there for a near neighbour, a lady, very fond of flowers, I first tried at the recommendation of a friend, Roses on the Manetti; they were tried in conjunction with tall and dwarf standards, but only two years' experience convinced me that for permanent planting in light soils, and I may add for all ordinary garden soils, the system of growing dwarf Roses on the Manetti, which afterwards get established on their own roots, is more satisfactory. I will add a few words on the seedling Brier as a stock later on. The winter management of dwarf Roses divides itself into, I may say, three heads; first, method of pruning; secondly, of protection; thirdly, of nourishing, &c. With regard to pruning, I am not an advocate for pruning closely too early. All Roses should be gone over after the first bloom is over, and all weak growth removed, then about the middle of November any very rampant shoots may be shortened, the beds raked over after the fall of the leaf, I do not mean to say of all the leaves of the Roses, for many will remain on in spite of wind and rain and frost much later, but after the great bulk of the deciduous trees, whose leaves blow about a garden, have shed their autumnal foliage. This is a good time to see if any are so much worn out as to require replacing; there is no worse policy with the queen of flowers than to keep unsatisfactory old plants; and, as a rule, there is no better time for planting than the middle of November, the earlier the better if the season is favourable. I am not an advocate, especially in light soils, for digging the beds; let them be very lightly and slightly forked over with a steel fork, and no manure put on the beds till the middle of December. This gives the stems and roots of the plant more advantage of light and air. About the middle of December well decayed old hobbed or farm yard manure, especially from the pig stytes, where pigs are being fed and fattened, may be put over the beds, and then covered over with longer manure, or even light Barley or Oat straw. Should the Rose garden be unfortunately exposed to wind, one of the most fatal things to success in growing good Roses, then all strong shoots partially shortened should be tied, and the longer manure may be kept in its place by pegging it down with Osiers or Hazels; one good way is to lay the Osiers or Hazels, or even long tile laths on the manure between the plants, and peg with galvanised wire pegs, which can be easily bent out of No. 15 to 18 wire, such as is used for straining to walls to tie in fruit trees. As a rule, however, it is almost useless to try and grow even dwarf Roses on the Manetti, Seedling Brier, or their own roots in places too much exposed to the wind. Where difficulties of this sort have to be contended with, hedges of Hornbeam or clipped Yew may be grown as protection with advantage. I am not venturing to make these remarks for an experienced Rose grower; in fact, from such I have more to learn than to teach; but as a warning to amateurs who have not had long experience. The opposite extreme, of too much shade and too crowded planting, or being subject to the inroad of roots of trees, &c., is in its way as bad; but it is to be hoped by this time very few who love the Rose would subject it to this treatment. Nor again, in these few records of observation and experience, do I venture to give advice to exhibitors, who are competitors at the larger shows, but to those who are content to grow Roses for their own amusement and interest, and to exhibit in the smaller classes, or at local shows, to increase their zeal and to measure their strength. In the more severe contests between nurserymen and noted amateurs, the blooms are mostly cut from maiden plants, whether on the standard or seedling Brier stock or on the Manetti. Still I venture to affirm that if proper care and attention is given to Roses as dwarfs in ordinary garden soil, good and perfect blooms may be picked for many years from the

same plants, which will with difficulty be beaten even by selected blooms from large quarters of maidens. As a rule, no further attention is required for the Roses till the returning spring begins to awaken new life. Then comes the final pruning, but first remove the longer manure about the end of March or beginning of April. The stiffer the soil and the colder the climate, the longer the covering may remain. Try, too, and choose a dry time, and see that the beds are not trodden over more than necessary. In nearly all kinds of dwarfs, whether on the Manetti or seedling Brier, it is advisable to cut away all wood more than two years old. Shorten the shoots on the growth of the older wood left (which will be the side branches) more than the stronger shoots of the previous year's growth. In pruning dwarfs early in a doubtful season, it is wiser not to prune too closely at first; but we should never be afraid of cutting away weak wood, or any that appears damaged by the winter. But my experience teaches me that it is better to prune too late than too early; but in the summer, in the south of England—more especially in the south-west—earlier pruning is admissible, if not even advisable. Should, however, late spring frosts prevail, or, as is often the case, recur again in the beginning of May, after an interval of a warm April, it is a great advantage to be able to re-prune, and find sufficient uninjured wood and buds left. Contrary to what many persons would expect, strong growth of the previous year is more able to resist frost—especially spring frosts—than older wood. For instance, many persons would argue that because a Dog Rose in a hedgerow is indigenous, a native plant, it would be more hardy than an imported Rose; but in three different winters I have noticed Dog Roses (the Hedge Brier) killed, while garden Roses of the hardier sorts have stood the frosts, and only the younger shoots of the Brier have survived—what most persons would have called succulent. I have never yet, strange to say, seen strong shoots of Manetti stock injured by frost. After taking off the longer manure and pruning the plants in the spring (say, from the middle of March to the latter end of April, according to the season, situation, and soil) then, after taking off the prunings, fork the beds slightly, so as to cover over any old, well-decayed manure left on the surface, but do not disturb the roots of the Roses more than can be helped, and, above all things, avoid a spade. I venture, too, to add, avoid as much as possible liquid manures and constant waterings: no doubt there may be some soils where it is almost necessary, but, as a rule, where there is a sufficient depth of soil, and where proper manure has been given in winter, and the roots of plants are not disturbed, the goodness of the manure will be washed into the ground by winter rains and snows, and the roots will go in search of it. Newly-planted Roses may occasionally require water, but though I have watered *Calceolarias*, and *Verbenas*, and *Lobelias* when first planted, I have never watered Rose beds, and see no necessity for it. It is a different thing with regard to climbing Roses against a wall, which can only get rain from one quarter, but I am convinced in my own mind that watering Rose beds only induces plants to make too much surface root, and water becomes at last a necessary requirement, and hot, dry weather leads to green fly and other ailments. I do not grow Roses largely—never, perhaps, having more than 1,500 plants at a time—but I have hardly suffered at any time, in the driest seasons from greenfly, though occasionally leaves will mildew and have black fringes to follow; but it is oftener from cold and damp, than want of moisture at the roots. Mine is only a light loam on a pure sand, but by plantings and shrubberies I am protected from winds, and, except in some positions, no Roses have the full sun the whole day through. Of course there are soils, especially where the subsoil is gritty and porous, where spring and summer watering may be necessary, but when I read of persons recommending constant watering, and eternal syringing with soap-suds from the laundry and liquid manure from the stables, I am inclined to say that they would over-egg the pudding. At all events, if water has to be given, do it thoroughly, not too often; let it get to the extreme depth of the deepest roots, and add good liquid manure, with a little guano and superphosphate. Constant dribblings are most fatal to the well-being of a dwarf Rose.

Now, as to the seedling Brier, my friend, our president, is all in favour of it. I have no doubt that in strong clays and wet, cold land, where the finer roots of the Manetti perish from cold and damp, the seedling Brier, if budded the third year from its first growth, will be a most valuable stock. If, after transplanting, the plants are put sufficiently deep in the ground, the difficulties arising from root-suckers may be avoided.

I do not believe that Manetti stocks are too strong for the weaker Tea Roses, but that Tea Roses on strong lands have not sufficient strength of wood to give root action to the Manetti; and their inclination is to throw up bud-shoots from the base, just as seedling Briers are inclined to throw up suckers. I have not, certainly, tried many of the seedling Brier, because my land is not suited to it, though it is undoubtedly better than the hedgerow standard. But in most garden soils (for the generality of soils are neither heavy clay, unc-

tuous loam, nor blow-away sand) the office of a stock is to supply roots and extra roots, till the scion is established, and well established on its own.

The seedling Brier does not naturally push so early as the Manetti, and, as Teas are inclined to be forward, budding on this stock helps to backward them: and in the case of H.P.s, exhibitors will always find that their seedling Briers will give them blooms for their later exhibits when their Manetti stocks are failing them. But in the winter management and pruning of Roses on the seedling Brier stock, I am inclined to think that, as the growth is generally shorter, the pruning ought to be later and more severe, and the mulching material kept on later. The roots of the seedling Brier are far thicker, but less numerous than those of the Manetti, and require stronger and more tenacious soil; and I believe it is a mistake to let these seedling Briers get too strong or too old before budding; and when transplanted, they should have the scion buried as deeply as that on the Manetti—at least 3 in. to 4 in. in light soils, and 2 in. to 3 in. in heavy. It seems to me, in these days, with greater knowledge and observation, to be afraid of Rosarians having their Roses injured either by Manetti shoots or Dog Rose suckers, is no longer a theme to be harped upon; but I still maintain that the Brier is more inclined to throw up suckers, even on the seedling, than a properly dis-budded Manetti stock is to throw up shoots from the base. A practised eye will readily see and discover either, and one who cannot see the difference between the shoot of a Rose—whether H. P., Tea, or Bourbon, &c.—and a Manetti or Brier, has not much observation.

In spite, then, of the verdict of many of our leading Rosarians—notably our president—I am inclined to think that it is only on strong and heavy soils, or wet, unctuous land, that the seedling Brier, as a stock, has any advantage over the Manetti, and that if Roses on the seedling Brier, like Tennyson's brook, "go on for ever," it is when they have established themselves on their own roots, or where their growth is strong enough to afford sap to the Brier stock, as well as their own roots, without the constant attempt to throw up suckers. My own impression still is, that the majority of garden soils—especially when under long cultivation, and with the constant addition of leaf mould and decayed manure, naturally accumulating in a garden soil to form humus—are not to be characterised as heavy and wet soils; and I am equally convinced in gravelly, stony, or calcareous soils, the seedling Brier has little chance against the Manetti. I do not think a sufficient trial has been given to the Celine, and I see no reason why other stocks may not yet be found with clear bark, fine roots, and healthy growth, which may supersede either.

I conclude these notes by saying, that as the natural inclination of a Rose is to throw up young growth from the base, and so recuperate its strength, and as these stronger shoots give the finer blooms, so in the general management of the Rose, both in pruning and culture, every encouragement should be given to those stronger shoots, and all the older wood removed from time to time—especially at the first winter pruning, and with due care, the same Rose plants will continue for years to give blooms which will not disgrace the best exhibition stands.

AMERICAN NOTES.

Excellent Protection against Rusting.—For garden implements of all kinds, having metal surfaces exposed, for knives and forks, and other household apparatus, indeed for all metals likely to be injured by oxidation or "rusting," we know of no simpler, more effective application than that furnished to the "American Agriculturist" by the late Professor Olmsted, author of "Olmsted's Natural Philosophy," &c. He used it on air-pumps, telescopes, and various other apparatus.—Take any quantity of good lard, and to every half-pound or so, add of common resin ("rosin") an amount about equal to half the size of an egg or less—a little more or less is of no consequence. Melt them slowly together, stirring as they cool. Apply this with a cloth or otherwise, just enough to give a thin coating to the metal surface to be protected. It can be wiped off nearly clean from surfaces where it will be undesirable, as in the case of knives and forks, &c. The resin prevents rancidity, and the mixture excludes the ready access of air and moisture. A fresh application may be needed when the coating is washed off by the friction of beating stumps or otherwise.

The Scarlet Monkey-flower (*Mimulus cardinalis*).—In the Atlantic States we have two native species of *Mimulus*, but their pale purplish flowers are not showy. In Michigan and westward there is a yellow-flowered one, and still further west the number of species increases, until on the Pacific coast they become so numerous as to number about twenty-five. Probably the best-known *Mimulus* is *M. moschatris*, the Musk plant, so often abbreviated to "Musk" that many suppose that the drug with all-powerful odour, some call it per-

fume, is obtained from this plant, instead of being unpleasantly animal. The scarlet Monkey-flower, a native of Oregon and California, has been in cultivation for nearly half a century, but, like many other good things, has been pushed aside by newer comers. We saw it in its wild state many years ago, but never happened to cultivate it until last year. The plant was unintentionally left out last fall, and, as the succeeding winter was unusually mild, it came up last spring with great vigour, and has all summer given a continuous bloom, which has not ceased up to the time we write (Oct. 25). It cannot be relied upon as quite hardy, and it is safer to make new plants from cuttings to keep over the winter in the greenhouse. In its native localities the plant is 2 ft. to 4 ft. high, but in cultivation is rarely over 1 ft., and, as it branches freely, is about as broad as tall. The stigma of this flower (the terminal portion of the pistil which receives the pollen) is very sensitive. Instead of a blunt end or knob, as in most flowers, the stigma consists of two egg-shaped plates; these spread apart when the flower is in "full blow," but whenever pollen falls upon the inner surface of these plates they suddenly close; they are so irritable that the same movement takes place when they are touched by a small splinter or any other hard substance.

Straw as Fuel.—The European Mennonites, whose religion prohibits bearing arms, have within a few years come to this country in large numbers, and have formed already prosperous colonies in Kansas and other Western States. In their new homes they follow their former pursuit—farming, and many of them brought with them the implements they formerly used, affairs so quaint and cumbersome, that they appear more like a collection of antiquities than articles for real use. Besides their farm implements, they brought over their household effects, conspicuous among which are a large clock to hang upon the wall, and a huge, curiously ornamented chest to hold the household treasures; these are to be seen in almost every Mennonite home. Though they could not well bring their enormous stoves to their new homes, they have brought their domestic customs with them, and the house in Wisconsin and Kansas is heated, and their meals are cooked in the same manner that they were in the old home in Russia and Prussia. "The Americans burn money, we burn straw," says the Mennonite settler; how they manage to keep warm in winter, and to cook the year round with no other fuel but loose straw, is a mystery to the average American. The Mennonite immigrant, when choosing a locality, is quite unconcerned at the total absence of timber, and will settle many miles from wood or coal, with indifference as to the fuel question, in localities where an American would never think of making a home. He sees fuel for the first year in the miles of grass about him, the second and succeeding years he will have the straw from his crops, and straw stacks are his favourite substitute for the wood-pile and the coal-bin. We first saw straw in use for fuel at the house of a Russian Mennonite bishop in the colony in McPherson Co., Kansas. Dinner for four of us was to be prepared. A vigorous young Mennonite girl vanished with a bushel basket, and returned with it full of loose straw, then placing her kettles, &c., on the top of the cooking range, opened the fire-door, and thrust in two large handfuls of straw, touched the match, closed the door, and the kettle commenced singing almost immediately. The fire was "dead out" before the dinner was half consumed.

The Graceful Sunflower (*Helianthus orgyalis*).—Those whose knowledge of Sunflowers is confined to the common annual species (the Sunflower) can hardly conceive of a graceful one. Some plants appear to be associated with certain surroundings, and to belong to shiftless, "ne'er do well" people. The dwelling of such is often surrounded by a dilapidated fence, within which Sunflowers and Love-lies-bleeding suggest that even in a house where old hats and rags supply the place of window panes there is some one who has a love for flowers, however coarse they may be. But all Sunflowers are not coarse, and while we admit that there are many unattractive ones, we claim that there are a few really desirable species. Among the most interesting and showy of the many Sunflowers is *Helianthus orgyalis*. *Helianthus* is easily translated into Sunflower, but when we came to find an appropriate equivalent for *orgyalis* we were puzzled. The word means the height of a man, but Man-high Sunflower, or even Six-foot Sunflower, would hardly do. In considering what name would be best for a plant likely to become more or less popular, we were glad to find the difficulty removed. In "Hardy Flowers," a name—the Graceful Sunflower—which is not at all inappropriate, has been given it. We had known this species for several years, but had not especially noticed its beauty until we saw, the past autumn, at the Cambridge Botanic Garden, a fine clump of it, 10 ft. or 12 ft. high, where it was contrasted with a large number of other species of Sunflower, and easily outshone them all. For clumps upon a lawn this is a most effective plant, and, from its height, it may be used for the centre of ornamental groups of bold plants.—"American Agriculturist."

THE FLOWER GARDEN.

THE GREEN HELLEBORE.

(HELLEBORUS VIRIDIS).

THE Hellebore represented by the annexed illustration may be taken as the type of that group of Hellebores which are characterised by their deciduous leaves, produced on erect stalks, being circular in outline, and invariably split up into several more or less narrow divisions, and bearing blossoms varying from green to purple on forked stems. Though they cannot claim to be considered as showy garden plants, yet their handsome verdant foliage and the property which they possess of delighting to revel uncared for and undisturbed in shady places admirably adapt them for planting by the sides of woodland walks, or in company with similar subjects in the wild garden—in short, any place where the soil is not too poor, or the position too much exposed. *H. viridis* is a widely-distributed plant in Western Europe, besides being one of our native wild flowers. Though somewhat rare it is found growing in company with the common Columbine and the rare *Actæa spicata* in shady woods in the limestone districts of the north of England. The other kinds comprised in the group include *H. dumetorum* and *laxus* with green-flowers, *H. inter-*



The Green Hellebore in the Wild Garden.

medius, *graveolens*, and *purpurascens* with purplish blossoms, *H. Boconii* with much divided leaves, and *H. cyclophyllus* not at present in cultivation. W.

SPRING-FLOWERING BULBS.

THERE is a freshness and vigour in the growth of all bulbous-rooted plants which pre-eminently distinguish them from the generality of flowering plants. Not only are they exquisitely beautiful in themselves, varied in manner of growth with flowers of the most tender and delicate hues, but many of them emit an agreeable odour. When one sees the Snowdrop and Daffodil making their way through the earth, one knows that the dreary winter is over, and that each succeeding day will bring us something of a cheering nature; and no kind of flowering plant can give a greater amount of pleasure for time expended than such spring-flowering bulbs as the Hyacinth, Narcissus, Tulip, &c. Their culture is so simple, either as pot plants or in the open air, and the amount of time occupied in their growth is so small, that it lies in the power of nearly everyone to gratify their love for these beautiful and fragrant flowers. The handsomest of all spring-flowering bulbs, the Hyacinth, is within the reach of all, as mixed varieties of it may be purchased at a very cheap rate. Those who may not object to expense will of course choose named kinds, at a higher rate; but where the florist's ideal is not sought for, the cheaper

varieties will prove quite as satisfactory. Flowering bulbs associate well with all kinds of plants; for room decoration nothing excels them, as they harmonise beautifully with Ferns and other fine-foliated plants; and a few Hyacinths and Narcissi in the conservatory or winter garden impart a spring-like appearance thereto, such as is scarcely to be obtained by the use of any other flowering plants. In the winter garden there should always be pockets left in the Mossy turf, in which the pots may be plunged so as quite to hide them; in such positions bulbs have a most natural appearance, and remind one most vividly of those woodland scenes where Bluebells and Daffodils grow. In a large winter garden in Germany bulbs of all kinds were extensively employed in this manner. Recesses and nooks were left here and there amongst the evergreen trees and shrubs, and these were filled with flowering plants. The walks were bordered with *Selaginella*, and provision having been made for that purpose, bulbous and other flowering plants were so placed that they appeared to be springing up from the turf and amongst the shrubs in a most natural manner. This arrangement suited flowering plants generally very well; but the bulbs alone conveyed the impression that they might have been planted and grown into bloom there. In the arrangement of bouquets the bells of the Hyacinth are invaluable, the shades of blue being very effective. Tulips are not so highly valued as in former times, and by many are stigmatised as gaudy; but the scarlet *Van Thol* is very acceptable early in the year, being bright and distinct, and I certainly must confess to a large share of admiration for those grand varieties, the yellow *Tournesol* and *Rex Rubrorum*. They need the companionship of light, feathery foliage, and never appear to so much advantage as when associated with Maidenhair and other Ferns. They should, indeed, never be so placed that the eye rests upon them in their entirety, as the foliage is not in proportion to the size of the flowers, which renders them somewhat glaring and obtrusive. In Covent Garden Market they are often seen planted with small Ferns and Mosses, and this arrangement is probably the most tasteful that can be adopted. In the open air they have a more natural and pleasing appearance when growing near shrubs; they do not look well massed in beds in open situations—indeed, to my mind, this is not the place for any kind of bulb, their organisation plainly indicating that they need the fostering care of a more robust vegetation. I am not now writing from the florists' point of view, as I am aware that where a choice collection of Tulips is maintained, the grower so manages that his beds are in some way sheltered. I am merely alluding to the planting of the more common kinds with a view to their successful growth, without any special care being needed at blooming time; and this desideratum is best realised by choosing sites naturally congenial to them. As an instance, let us take the Daffodil. Where does it really appear most at home, and flower in the best manner? Not growing out of the bare earth in exposed situations, but springing from the fresh, bright turf, and where the heavy rains and furious winds are broken from them. I know a wood where the Daffodil and Primrose grow in the wildest profusion. Luxuriant masses of foliage spring up through the Grass and Mossy turf, and are covered with thousands of blooms. At flowering time it is indeed a scene of picturesque floral beauty, and is a point of pilgrimage for flower lovers, who carry off cartloads of them. Such scenes as this make one wish that our choicer kinds of Narcissi could be so placed that they might enjoy the conditions natural to them, and open up visions of what might be, but of what, alas! one can scarcely hope to see realised. It is however, very certain that more might be accomplished in this way than has been generally attempted, not on a large scale perhaps; but there are few places where some portion of the garden could not be dedicated to this purpose. It is not so much the extent as the arrangement which charms, and in this matter we must, as far as possible, follow Nature's teachings. The modest little Snowdrop and the wild Hyacinth are always found peeping out from the midst of Grassy verdure; there would be something incongruous in their appearance if seen growing in the bare earth. Their home is where they are in constant association with other forms of vegetable life, and their near relatives will, I imagine, be found to thrive best when similarly situated. J. CORNHILL.

Byfleet.

PAMPAS GRASS IN AVENUES.

I HAVE often seen and admired the fine rows of Pampas Grass in the Messrs. Suttons' seed grounds, and have wondered that this truly noble plant has not ere now been largely used to decorate the approaches and drives to some of our large mansions. I should, however, undoubtedly object to the use of the Pampas Grass alone for this purpose, just as I object to the use of any one kind of tree for the formation of an avenue, except where it is desired to secure an arched umbrageous cover, and then nothing will excel a double row of the Elm, Lime, or Horse Chestnut. But lines of trees thus formed are, however pleasing when fully grown, the reverse of artistic and, indeed, planted with a rod and line, may be performed by any ordinary labourer. The Pampas Grass can only be introduced with effect where it is intended to obtain some fine display of planting skill and the production of a bold and broad outline. To obtain this a straight line of road should be avoided as, however, striking a straight avenue of trees may be, as is the case in the Long Walk at Windsor, for instance, it would be stiff, formal, and monotonous if found where a finely-planted border was intended rather than an avenue. Given a broad, well-kept carriage way, there should be on either side a clear margin of at least 10 ft. of Grass, at which line might be planted on either side rows of Pampas Grass. Not less than 30 ft. distant from these again on either side might come a row of fine Conifers, not limited to one kind, but composed of Wellingtonias, Decidars, Picea nobilis, P. Nordmanniana, and similar strong-growing kinds. They should be planted exactly behind the Pampas Grass, and, midway between the clumps of Grass, but thrown back to form a separate line, should be planted good specimens of Cupressus Lawsoniana. Finally, on either side behind all, a row of Horse Chestnut or Elm, beneath which should run footways for pedestrians. This combination would be something worth looking at.

A. D.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Hardiness of *Stobæa purpurea*.—It may interest Mr. Hemley to know that *Stobæa purpurea* has proved perfectly hardy here for four years. It increases considerably by running underground shoots which push up in the spring. I have only the pale purple variety, and never saw a plant with flowers of so deep a colour as those represented by the plate in THE GARDEN a few weeks ago. It is to be regretted that some of our enterprising collectors do not introduce the other known species of *Stobæa* and *Berkheya*. They would, in all probability, be perfectly hardy, and are so curious that many would be glad to grow them. *S. purpurea* has never yet ripened seed here.—H. HARPER CREWE, Drayton-Beauchamp Rectory, Tring.

The Recent Lily Discussion.—Now and then some horticultural writer hits upon a subject of such universal interest that he is at once attacked and defended from a dozen directions, and, if he stands by his guns, will inevitably have his hands full. A few months of rather lively cut and parry usually brings a vast fund of dormant information to light and clears the atmosphere wonderfully. Our English friends are quite apt to do this sort of thing, and we notice that "Dunedin," Mr. T. Baines, and others have recently been discussing the treatment of Lilies in the columns of THE GARDEN. "Dunedin" believes in moving Lilies as soon as the flowers have faded and he objects to encouraging the growth of stem roots. We differ from this portion of his treatment, although we agree as regards the decay of the old bulbs and the formation of new ones internally. We think that, with us, if fine Japan Lilies are desired, some top dressing and good mulching are necessary. We would move Lilies early in November, the stem being then withered. As an example of this treatment, we last season had *L. auratum* with forty-one perfect blossoms and *L. speciosum* with sixty, both being grown in the open ground.—"Californian Horticulturist."

Hollyhocks from Seed.—For decorative purposes, seedling Hollyhocks from a good collection are almost equal to named kinds, and there is, as a rule, more vigour about seedling plants than about established ones, and they are less liable to fall a prey to that terrible fungoid disease that has done so much injury to Hollyhocks in some districts. If the seeds be sown immediately in a warm house or a hotbed, and the young plants potted off and well attended to afterwards, most of them will flower this year. Strictly speaking, Hollyhocks are biennials under ordinary cultivation in the open air; but by sowing early in the year, and growing them on liberally with heat and plenty of moisture till the end of March, and hardening them off and planting them out in April, they will be converted into annuals. Some of them will probably be later in flowering, and it is possible that one or two may miss flowering; but nearly the whole will flower

well, and continue blooming till quite late in the season, most likely till cut off by frost. In order to have fine spikes, the soil should be deep and rich, and should have been well loosened up and manured some time previous to planting. Unless this has been well done, make large holes where each is to be planted, and put in each hole half a bushel of rotten turf and manure in equal parts and plant in it. This will be a good plan to adopt when planting among shrubs, or in any position where it is not convenient to trench the ground.—E. H.

PLANT CULTURE FOR MARKET.

MIGNONETTE.—Growers for market cultivate Mignonette to perfection, and at every season of the year there is a demand for it both in pots and in a cut state. In spring plants in pots are sent plentifully to market. These are obtained from seed sown in 5-in. or 6-in. pots in autumn; when large enough to handle, the young plants are thinned out, leaving eight or nine of the strongest in each pot. These are then kept in brick pits close to the glass, are allowed abundance of air, and are protected during severe weather by mats or straw. In the month of March I have seen in one place 1750 dozen potfuls of Mignonette all coming into flower at one time, and an equal quantity of spring-sown plants growing on to succeed them. Well-grown Mignonette fetches early in spring from 7s. to 10s. per dozen pots. Mignonette as grown for market is of a very different description to that usually grown in private gardens; the plants are dwarf, requiring little or no staking; the leaves are large and of a black-green colour, and the columnar spikes of blossoms are well-formed, erect, and of large size. The bank of Mignonette shown by Mr. Reeves, of Acton, at the great exhibition of Covent Garden produce held at South Kensington on May 2, 1877, will probably be long remembered by those who saw it. Some sow their Mignonette intended to supply cut bloom in larger pots than those described, and small growers assert that early in spring they get on some occasions almost as much money for a basket of Mignonette sprays as they do for a load of common market plants. The soil used for Mignonette is of a light rich character; the pots are not filled at the time of sowing, but a margin is left for earthing up with rotted manure when the plants are well up above the pot. As regards staking, when the plants require any, two or three small sticks are placed round the edge of the pots, and a piece of bast is run carelessly round them. Damp is the greatest enemy to Mignonette in winter and spring, and this can only be guarded against by watering on fine days, leaving off the lights until the foliage has become dry, and by at all times giving all the air possible when the weather is favourable.

THE HYDRANGEA.—Few flowering plants which are brought to market are held in higher estimation than Hydrangeas, and nearly all London florists grow them largely. Their huge heads of rosy-coloured blossoms last for a considerable time, even when placed in dark, dusty rooms, provided the roots of the plants receive plenty of water. Hydrangeas are struck from cuttings usually obtained from old plants growing in the open ground, with which most places are furnished. They are inserted in autumn, winter, and spring, and, during the time they are leafless, they are packed closely together under stages or other out-of-the-way places until they again start into growth, when they must have air, light, and water if healthy, green foliage and large heads of bloom be desired. One of the best growers of the Hydrangea is Mr. Plimley, of Acton. His plants are flowered in from twelve to fifteen months, each plant bearing from one to three magnificent heads of bloom. The largest plants, which have

several shoots, are those struck from cuttings in the autumn, and which have been stopped. Those that we see in the market with a single stem surmounted by one immense head of bloom are the produce of cuttings struck during the winter and spring. The soil used for *Hydrangeas* is good loam, to which are added some well-rotted manure and sand. Those plants which are required to produce blue flowers are either grown in soil mixed with steel filings or they are watered with water in which steel filings have been steeped. The white-flowered *Hydrangea* Thomas Hogg, figured the other day in *THE GARDEN*, will, when better known, doubtless become a fine market plant.

CINERARIAS.—These are grown by thousands for market—sturdy, dwarf plants in 5-in. pots. They are raised from seed sown in spring, and the young plants are potted on in good rich loam until they occupy 6-in. pots. In autumn they are placed in the houses, and when they come into bloom the best are selected and moved to low, span-roofed pits for seeding purposes; the rest are taken to market. Those intended for seed producers are placed in sections according to their colours, and every possible precaution is taken to prevent cross-fertilisation. Abundance of air is admitted to the plants whilst they are seeding, and their roots are kept regularly supplied with water. As fast as the seeds ripen, they are gathered, and should any fall to the ground (which is covered with ashes) they quickly germinate and go a long way towards furnishing a supply of plants for the next years' blooming. Self or well-defined colours, such as blue, purple, and rose, or white kinds edged with these colours, are most sought after, and there is also a strain with mauve flowers which is much in demand; the plants should be dwarf in habit, and the flowers should have large and smooth petals. One grower in the north of London has six or eight lean-to houses, in which are erected stair-like stages within 2 ft. or 3 ft. of the glass. These are filled with *Cinerarias* in full bloom from soon after Christmas until after Easter.

HELIOTROPES.—Both for supplying cut bloom and in the form of flowering plants, the *Heliotrope* is grown largely for market. Cuttings of it from stock plants are put in at nearly all seasons of the year. The plants are grown in loam and leaf-mould, and the shoots are kept constantly stopped in order to keep them dwarf and bushy. In June and July the bulk of the pot plants come into market, but they may be had nearly every month in the year. Dark-flowered kinds are those mostly grown, and such as possess a very dwarf, compact habit, with every shoot bearing a good truss of sweet-scented blossoms. Mr. Hayes, of Edmonton, has a whole house devoted to *Heliotropes* for furnishing out bloom. The plants, which are very old, were formerly in pots; but, when, after a time, it became necessary to give them more root-room, they were so large that the operation became a difficult one; the pots which they occupied were, therefore, broken up and the balls of roots were firmly surrounded with good soil—thus practically planting them out. In this position these plants have been growing for about twenty-five years, and have formed a dense bank from 3 ft. to 10 ft. high, and from 9 ft. to 10 ft. through, and 50 ft. in length. From these plants abundance of sweet-scented blossoms can be cut at all seasons of the year, and during the winter months are especially valuable, all the attention which the plants require being a good watering occasionally during hot weather and removing decayed leaves. The blooms are cut several times a week all the year round and sent to market.

CYTISUS RACEMOSUS.—This makes a capital market plant, but it is rather difficult to propagate except from seed, and

plants obtained in that way are by no means equal to those raised from cuttings. *Cytisuses* are largely grown by fruit growers, who place them under their Vines whilst the latter are at rest, a position for which *Cytisuses* are well adapted, inasmuch as their season of flowering commences before the Vines have made so much growth as to injure them by their shade, and, by filling all the Vineries with them, as the Vines are started in succession, they bloom in regular order. These *Cytisuses* are struck from cuttings inserted in 6-in. pots in the autumn, from forty to fifty being placed in each pot, and placed in a close but unheated house. They make very little growth until the following spring; then, when they commence to grow, they are potted off singly into 4-in. pots, and placed in a warm house until the weather will permit them to be placed out-of-doors; during summer they are shifted into 6-in. pots, and by next spring they make handsome, bushy plants from 12 in. to 15 in. high, and nearly as much through, furnished with long spikes of bright golden blossoms, and dark green, healthy foliage down to the very rims of the pots.

RHODANTHES.—These handsome everlastings are extensively cultivated for market; one grower, indeed, disposes of from 10,000 to 15,000 potfuls of them yearly. The seed, which is imported direct from Belgium, is sown in successive batches in shallow wooden boxes. These are placed in gentle heat until the young plants make their appearance, when they are immediately removed to a lighter and cooler atmosphere, and, as they advance in growth, air is admitted freely to them on every favourable opportunity. When large enough to handle they are pricked off into 5-in. or 6-in. pots, putting from five to seven plants in each. They are then placed in light, airy positions on the floors of the houses, where they remain until they come into flower, when they are at once sent to market and replaced by others in less advanced stages of growth. Sowing usually commences early in February, and continues until the end of April or beginning of May, and from this latter period onward through the summer a succession of bushy, well-flowered plants is maintained. The varieties grown are *R. Manglesi*, and *R. maculata* and *alba*.

STOKESIA CYANEA.—This furnishes the chief supply of blue flowers for bouquet making during the autumn. They first make their appearance early in September, and are constantly to be seen in the florists' shops until late in December. The blue, Aster-like flowers are large and showy, each measuring about 3½ in. in diameter, and apparently semi-double. In the late-blooming property of this plant consists its chief value, for blue flowers are at this season of the year comparatively scarce. The plants are increased by division in the spring; and the slips, after being taken off, are inserted in a warm border or frame a few inches apart, in sharp, sandy soil. As soon as they are well rooted they are transplanted into good soil, and in August are lifted and potted, and when cold weather sets in are afforded the protection of a frame. I have never yet seen this plant offered for sale in pots; probably because its habit of growth is not sufficiently dwarf and stocky.

THE FORGET-ME-NOT.—In a cut state, flowers of this find a ready sale. They are associated with the choicest of white flowers in bouquets, and few blue flowers are prettier or more effective. Sometimes a few sprays surround a Tea Rose in a button-hole bouquet, and handfuls of *Forget-me-nots* are often sold in the streets at a very cheap rate. Plants of this universal favourite in pots also meet with a ready sale; they are usually taken from the ground when

in bloom, and potted the night before they are brought to market. There are many different kinds of Forget-me-not, but the common type is the one generally found in the market. All of them are easily raised from seed or cuttings, but sowing seed is the only practical mode of acquiring a stock of most of them. If sown in August, the plants will flower the next summer; and, if sown in spring, they will flower late in the autumn or winter. The seed may be sown thinly in the open air or in pans or pots, and, being remarkably small, it can hardly be covered too lightly. As soon as the young plants are large enough to handle, they are pricked off in a border out-of-doors or potted singly in 2½-in. pots. If placed in a cold frame for a time, they make rapid progress, and soon form useful little plants. Shift as they require it; and almost any of the Forget-me-nots grow into excellent window or room plants in 4-in. or 6-in. pots. The best place in which to grow the Forget-me-nots until they reach their flowering stage, is a partially-shaded, sheltered situation out-of-doors. They grow well in a mixture of rotten leaf-mould, manure, and sand. Good drainage is necessary, as most of these Forget-me-nots are semi-alpine plants, and cannot endure stagnant water at the roots, though they must not be allowed to get dry. Plants potted from the open ground in October or November, and, placed in a temperature of 50°, will flower at Christmas, and a succession may easily be had in bloom indoors till March, at which season it bursts into full beauty in the open air. Such fine Forget-me-nots as *Myosotis Imperatrice Elizabeth*, *M. azorica coelestina*, *M. semperflorens*, *M. sylvatica*, *M. alpestris nana*, *corulea* and its white variety, are all good kinds; but, for pot culture, *M. dissitiflora* is perhaps the best of all. The colour, when the blossoms are fully expanded, is a most exquisite blue, and the plant is good in habit. It grows to a height of about 6 in., and spreads out freely, soon furnishing a 4-in. or 6-in. pot. *M. azorica coelestina*, an improved variety of a well-known rich dark blue Forget-me-not, is also a plant of great beauty. *M. semperflorens* is a hardy variety that continues flowering with little trouble from spring to autumn. The white and blue dwarf Forget-me-nots (*M. alpestris nana*) only grow about 4 in. in height, and are little gems for pot culture.

LILIES.—These are principally sold in pots, their flowers being too large for anything, except for church or similar decorations, and, as a rule, flowers are not much in demand for such purposes when the majority of Lilies are in bloom. The earliest kinds are *L. candidum*, *L. eximium* and *L. longiflorum*, all of which are in bloom in June and July, and these are followed by *L. auratum*, and the white and rose varieties of *L. speciosum*. Lilies are sometimes grown in the open ground, and lifted and potted just before they come into flower; but, for early flowering, the bulbs are potted in autumn in 6-in. or 8-in. pots, filled three parts full of soil, and plunged in cold pits or placed on the stages of cool houses, where abundance of air and light can be afforded them. The soil used is rich, fibrous loam, rotted cow manure, and leaf-mould, with which a few lumps of peat are mixed if the loam be not so full of fibre as could be desired. Little or no water is given until the shoots make their appearance, after which the soil is kept well moistened. When it is getting full of roots, and these can be seen issuing from the stems of the plants, the pots are filled up with loam and manure. No more heat is given beyond just enough to keep the plants healthy and free from damp until the bloom-buds show themselves, when the plants are subjected to a little heat and kept syringed overhead to bring out

the bloom. *L. undulatum* is grown in quantity. It comes into flower early, but is not so much in demand as other kinds on account of the colour of its flowers. Potfuls of it may, however, be seen in abundance during May and June. Of other kinds there are generally two or three stems in a pot, and sometimes eight or nine in large pots. Lilies for market are much dwarfer than those usually seen in private gardens. This is effected by keeping them close to the glass, admitting plenty of air and keeping them well supplied with water whilst growing.

I have now named the bulk of indoor flowering plants grown for market; but there are many more cultivated to a less extent. Among these may be mentioned:

KALOSANTHES COCCINEA, a showy plant, and one which meets with a ready sale. It cannot, however, be grown so cheaply as many others, on account of its taking a comparatively long time to come into flower. Cuttings of it from old, cut-back plants as early in summer as they can be got, struck in gentle heat, and afterwards potted, either singly in 4-in. pots or four or five together in a 5-in. or 6-in. one. They are exposed to plenty of air, light, and sunshine in order that their wood may become stiff and firm, and next spring they flower. Plants of it potted singly, of course, only bear one head of bloom, and are, therefore, not sent to market; but sometimes these cuttings have two shoots and, in that case, two heads of bloom, and these are sent to market, but the plants with single shoots are cut back to within 6-in. or so of the pot, when they emit four or five shoots, which flower well the next season.

ABUTILONS are likewise grown for supplying cut flowers, and the white one, *A. Boule de Nieve*, is in great request as a pot plant. Most of them, however, grow too lanky for market work, and they are consequently not much grown in this way. A dwarf variegated kind named *A. Darwini tessellatum*, however, has been taken in hand by some growers for market, who find that good, bushy plants of it can be produced in a very short time by stopping the points of the shoots, and, as it flowers more freely than any other kind during winter, it will, no doubt, ere long become a good market plant. C. W. S.

TUBEROSAS.—The strong sweet fragrance of the flowers of these is not surpassed even by that of the *Gardenia*; indeed, it is much more agreeable, as *Tuberosas* have not that sickly odour about them which the *Gardenia* gives off when one comes too near it. Besides, the flowers are quite as beautiful, last longer, and can be used for similar purposes; and last but not least, the plants are easily grown, and are not troubled with insects. The imported roots are the best, and should be potted as soon as possible, at least for early work. A noteworthy authority on the subject recommends the plants to be plunged in strong bottom heat as soon as potted, and afterwards grown on in cooler quarters; but they do quite as well if started gently and pushed on leisurely. One lot was potted last year in February, rather late in the month, and started in an intermediate house, but the pots were not plunged. The plants started into growth sooner than was expected, and, to prevent the leaves and stems from becoming soft and lanky, they were moved into another house, where they got plenty of light and air, and a place for themselves; and throughout the summer and part of the autumn no artificial heat given, but the house was kept warmer than a greenhouse. They made robust growth, but very tall stems, and did not flower till August, and they continued to produce flowers for about three months. Later in the autumn a little heat was given, to assist the development of the flowers. As it was just the season we need such flowers, most single flowers were cut every day for the house, and a number of the plants were placed in the conservatory to give fragrance to the house. The *Tuberosa* is best grown in single plants to a pot, and 6-in. pots are a suitable size. A compost consisting of three parts loam, one part peat and sand, and a little well-rotted manure, will suit well. Good drainage, but not too much of it, should be afforded, and during growth plenty of water should be given. S. W.

NEW OR RARE PLANTS.

FRITILLARIA KARELINI.

This beautiful little Fritillary, although new to the present generation, was in cultivation in this country upwards of forty years ago, and was depicted in Sweet's "British Flower Garden," series ii., plate 283. It was originally sent to Mr. Anderson, of the Chelsea Botanic Gardens, in 1836, by Dr. Fischer, of St. Petersburg. The accompanying engraving is half the natural size of the plant, and was reduced from a coloured figure which appeared in the "Botanical Magazine" for January of the current year. In the colour of its flowers it exhibits a little variation, as shown by the different figures



Fritillaria Karelini.

of it published. The variety represented in the "Botanical Magazine," grown by Mr. George Maw, of Broseley, has white flowers suffused with pink and spotted with red. It has a wide range of distribution in Central Asia, extending from the Ural and Altai Mountains, through Turkestan to Afghanistan, Beloochistan, and Persia, and it flowers with us in winter. On account of a slight difference in the process at the base of the petals, it was formerly separated from Fritillaria under the distinctive name of Rhinopetalum, literally horse petal, and it was under this name that it was cultivated on its first introduction. The re-introduction of this lovely plant into European gardens is due, I believe, to the late Mr. Fedenschow, one of the many recent Russian explorers of Central Asia.

W. B. HEMSLEY.

HOTBEDS AND THEIR USES.

THE heat generated by the fermentation of leaves, stable manure, and other waste vegetable and animal substances, is, when under proper control, so genial and stimulating and, withal, so cheap, costing little in most country places beyond the labour of collecting and working up, that it forms the most economical mode of forcing all crops that require only a few weeks or months for their production; and, when exhausted, the materials are still available for manure, and when a proper place is assigned for them there need be no litter or

untidiness. January and February are the months during which hotbed making begins in earnest, and if a large heap of fermenting materials be ready for use through the spring the production of many crops besides Cucumbers, Melons, and Potatoes, may be made more certain and simple. In preparing for hotbed making the first thing of course is to collect and cart together the materials, and, so far as regards the leaves, these should all have been brought together before Christmas. All ours were collected just before the frost set in, and we carted them home during the time the first storm lasted; there was a little snow mixed with some of them, but not more than sufficient to make them heat well when thrown into a heap. Leaves alone, when in sufficient bulk, will force all kinds of vegetables, but it is always best to mix a proportion of stable manure with them; about half of each is a good proportion. The leaves neutralise and absorb the fiery gases of the manure, and the latter, on the other hand, communicates some of its heating power to the leaves, so that a hotbed made up of the two is better in every respect than when either is used alone, no matter how previously well prepared, either by mixing or turning. When all the materials are collected together, the manure and leaves should be well shaken up and mixed in the right proportions. If, as sometimes happens, there are dry spots in the heap, these should be watered, as there must be a certain amount of moisture present to insure fermentation. When the heap has lain ten days or a fortnight it should be turned over and well shaken together again, throwing the outsides of the heap into the middle and watering any further dry spots, so that a regular, even state of moisture exists throughout. Early Cucumbers or Melons, if grown in hotbeds, will require the most attention and the greatest nicety in the preparation of the materials and the proper bulk of the beds.

Cucumbers started in February should have the beds at least 3 ft. longer and wider than the frames—i.e., they should project beyond the frame 15 in. on all sides. The bed should be 5½ ft. high at the back, and 4 ft. high at the front; this will give it a good pitch to the sun. It should be put together carefully, and of the same substance and firmness throughout, so that the heat may be regular and steady. If made too solid the heat will be sluggish, and if left too open the heat will, perhaps, be too great. There must be a certain amount of air mixed with the material to insure steady fermentation, and, if that amount be exceeded or curtailed, the result will not be so good, and it is here that a little practical knowledge becomes useful, as something depends upon the condition of the materials as to the amount of pressure that ought to be applied. Very often a bed may be put up, and will answer admirably without any treading at all, the workmen simply beating it down with their forks as they build it up. In other cases this will not make it firm enough, and the workmen have to get on it and tread it moderately firm. In many cases some shelter should be applied to hotbeds. A row of bundles of Pea sticks set up endways on the windward side has a wonderful effect in keeping the heat steady during boisterous weather. Shutters reared up against the bed on the windy side will also answer the same purpose; anything, in short, that will furnish shelter. Hotbeds for forcing Potatoes, Carrots, French Beans, and other vegetables, will not require so much preparation, and need not be so large as those for Cucumbers, and, if placed in front of and close to the Cucumber and Melon beds, leaving plenty of space between the rows of frames to get between them, they will answer the purpose of linings to the latter, and it will be, in fact, altogether an economical arrangement. I have tried this plan often, and found it very advantageous, as the space between the rows of frames could be filled up almost as high as the top in cold weather. I have occasionally, when I had much forcing to do, had as many as three and four rows of frames all ranged closely together in parallel lines, and the heat in such a bulk of material is always regular and steady, and not nearly so much labour is required. The frames in the centre row would be occupied with Cucumbers and Melons, and the outside rows with Potatoes, Beans, Carrots, &c.

As the season advances, a good deal of forcing can be done with only a limited quantity of material. Digging a hole in a sheltered corner 2 ft. deep, and filling it full of hot litter and leaves, returning 6 in.

or 8 in. of the mellowest, driest soil, will make a capital bed for early Radishes, Early Horn Carrots, White Dutch Turnips, or raising young Onions, Leeks, or other plants for transplanting which may be desired early. Take the case of early Long-pod Beans; if planted thickly on such a bed in a sheltered place, when the weather becomes more settled they can be moved to a more open situation, and nothing transplants better. Any plant that transplants easily—and almost all will do so, if pains be taken with them—may gain a week in point of time by being started on one of these open-air hotbeds without any glass at all. Mats or netting, or even evergreen branches, or a little straw may be used to cover and protect the beds in cold weather. Cabbages, Lettuce, Cauliflowers, and Brussels Sprouts may be sown early in February on such a bed in small quantities, in order to have a few plants to put out early, or to fill up vacancies caused by the severe winter. In some places there will be a scarcity of green vegetables, and an effort should be made to push forward crops to fill up blanks as early as possible.

Later in the season hotbeds of a temporary character are exceedingly valuable for purposes of propagation, such as the rooting of cuttings or raising seeds. Lobelias, Alternantheras, Iresines, Coleuses, and similar plants may be raised on slight hotbeds in April, dibbled into a thin stratum of light sandy soil on the top of the fermenting materials. Having a good many thousands of plants to provide annually, I have tried many different plans, in order to discover the best and cheapest way of raising them, and which will at the same time give the best results, and I have finally adopted this for spring propagation. It necessitates a good stock being kept, but where many plants are required this should be done always, as although, by severe forcing and pushing, a large number of young plants may be obtained from a limited number of stock plants, yet the produce from plants over forced is never so strong or vigorous as those treated more naturally, and beds planted with weakly plants are a long time in filling up, and never grow up together regularly. An ordinary two-light frame placed on a bed of fermenting materials 3 ft. deep at back and 2 ft. deep at front, say in the middle of April, will hold easily 2,000 Lobelias or other small cuttings. The warmth from such a bed will be just sufficient to root the cuttings and then decline. Healthy cuttings of most plants in such a genial bed will strike in a week, and at that season, if more stock be required, the tops may soon be taken off and dibbled into another bed of similar size, and, as soon as the cuttings are fairly rooted, abundance of air can be given, until finally the lights can be removed altogether. Although I have mentioned the middle of April, yet of course everything depends upon the work to be done and the conveniences for doing it; yet I may say that the best and most lasting beds of Lobelias which we had last year were from cuttings inserted in a very slight hotbed the last week in April. To be able to grow these plants in frames in spring without a single pot relieves the houses, and also the hands, a very great deal, and there is no loss as regards efficiency; on the contrary, in that respect there is an improvement.

E. HOBDAY.

Garden Labels.—The best with which I am acquainted are those manufactured by Mr. Smith, of Stratford-on-Avon, who has recently made great improvements in labels—notably in those for Roses—by having them neatly soldered to the wire support. By this method there is not the least danger of the label getting displaced by the wind. The names are in the form of raised letters, and the label is capable of withstanding any atmospheric action to which it may be subjected, for a great many years.—A. HOSSACK.

Nettles.—Notwithstanding the surprise expressed by the Rev. Mr. Harper Crewe (p. 4) at M. Levallés's statement regarding the co-relation between the Nettle and the abodes of man, it is a belief with which I have long been familiar, although whether it is a vulgar error or not I am unable to say. The following fact, however, lends some support to the popular idea. Some four or five years ago I came upon an isolated patch of Nettles, when grouse-shooting on a Scotch moor some six miles distant from the nearest human habitation. Here, thought I, is a proof of the fallacy of the received opinion, but on inquiry I found that a shepherd's hut had once stood on the spot, all signs of which had long since disappeared.—W. E. HAWKES.

PLATE CIXVI.

THE YELLOW TORENIA.

(TORENIA BAILLONI).

MANY of our readers who attend the meetings of the Royal Horticultural Society will remember this pretty *Torenia*, which has been exhibited several times by Messrs. Veitch. We have only seen small plants of it, but in habit, foliage, and flowers, except in the colour of the latter, it is essentially *T. asiatica*, of which it is probably a variety, though a very distinct one. In the colouration of the flowers, it reminds us of one of the varieties of *Thunbergia alata*, the lobes of the corolla being of a rich golden-yellow, whilst the tube and throat are of a deep reddish-purple. Like *T. asiatica* and *Fournieri*, it is easily grown, the conditions requisite for the successful cultivation of either suiting this also. Although it will grow in a cool greenhouse, and probably (like *T. Fournieri*) even flower freely in warm, sheltered, sunny spots in our southern counties, it is most at home in a warm house, where, if it meets with anything like generous treatment, it will flower the greater part of the year. Like *T. asiatica* it makes a good basket plant, and in this respect possesses a decided advantage over *T. Fournieri*, which is of more bushy upright growth. *T. Baillonii* seems to do best in a light, well-drained compost consisting of one-half fibrous peat and the other half loam and leaf mould; though not strictly an annual it is best to treat it as such, and a stock of it is easily and quickly raised from seeds, to obtain which, however, artificial fertilisation must frequently be resorted to. To M. Godefroy-Lebeuf, of Argenteuil, near Paris, belongs the honour of introducing this lovely plant to European gardens. It is a native of Cochinchina.

PLANTS AFFECTED BY FROST AND EAST WIND IN THE RIVIERA.

I SUPPLEMENT my notice (p. 59) of the effects of frost during the winter in the Riviera by a list of plants that have suffered the most from exposure. The list was furnished to me by Messrs. Piv & Gullino, nurserymen, of San Remo, and may be relied on as authentic. I give the list alphabetically for the sake of easy reference, irrespective of class or country:—

<i>Acacia corymbosa</i>	<i>Hebeclinium lanthium</i>
<i>Acanthia Malvariviscus</i>	" <i>atro-rubens</i>
<i>Achyranthes picta</i>	<i>Hoya carnosa</i>
<i>Aralia papyrifera</i>	<i>Ichroma tabulosum</i>
<i>Begonia dodealea</i>	" <i>Warszewiczii</i>
<i>Cereus truncatus</i>	<i>Iresine Lindenii</i>
<i>Cestrum aurantiacum</i>	<i>Jacaranda mimosaefolia</i>
<i>Glaucus magnificus</i>	<i>Justicia rosea</i>
<i>Cobaea scandens</i>	<i>Libonia floribunda</i>
<i>Cuphea emicans</i>	<i>Lippia montevidensis</i>
<i>Cyrtanthus magnifica</i>	<i>Lophospermum scandens</i>
<i>Dahlia imperialis</i>	<i>Musa paradisiaca</i>
<i>Datura arborea</i>	<i>Pereskia aculeata</i>
<i>Echium giganteum</i>	<i>Salvia involucreana</i>
" <i>candicans</i>	<i>Spartmannia africana</i>
<i>Geranium hederacifolium</i>	<i>Sphaeralcea umbellata</i>
<i>Goldfussia Dicksonii</i>	<i>Tradescantia discolor</i>
	<i>Wigandia caracasana</i>

Hovingham Lodge, York.

PETER INCHBALD.

Eupatorium odoratissimum.—This is a very useful plant for winter blooming. It is invaluable for the cool conservatory, and is especially suitable where means are limited. We have a number of large bushes of it standing in a house where the frost has only just been kept out, quite white with large panicles of flowers; and they have been in this condition for the last six weeks, and will continue so for a long time yet, and after the first bloom is over, if the ends of the shoots are cut off, a new crop of flowers will be produced. The plants to which I am referring were old ones cut back last June, planted out in an open sunny border, lifted and potted in September, placed on the north side of a fence to get established a little, and housed before sharp frost was expected. Cuttings struck in spring and planted out will make good-sized bushes in one season, but do not, of course, make such dense, well-furnished specimens as older plants that have been well pruned in and planted out about June.—E. H.

PROPAGATING.

PERNETTIA MUCRONATA.—This beautiful American flowering and fruiting shrub may be increased by means of cuttings, prepared as shown in the accompanying woodcut, and inserted in April and May. The soil, which should consist of equal parts yellow loam and peat, and a fair sprinkling of silver sand should be well mixed together and sifted somewhat finely. Select a spot on a sunny border, place thereon handglasses or a small frame, and fill them with the soil just mentioned to the depth of 4 in. or 5 in., pressing it down rather firmly. Then put a little sand on the top, give a slight sprinkling of water, and insert the cuttings, fixing them in firmly. Then give a good watering to settle them in their places, and cover them up, keeping them close for the first three weeks till they begin to callus, when the glass top may be removed occasionally for an hour or two each morning if not frosty. They will be ready, if all has gone well, for potting off about the end of August. H. H.



Cutting of *Pernettya mucronata*.

SPRING PROPAGATION FROM SEED.

WHILE many kinds of bedding plants are propagated by means of cuttings in spring, many also are raised from seed, and the time has now arrived when such must have attention. Where there are only small quantities of plants wanted from seed, a pinch of such as *Lobelia*, *Pyrethrum*, &c., sown in a small box or 8-in. pot, will generally be sufficient, but where large numbers are wanted the best way of raising them is to sow the seeds on hotbeds. This is the plan which we mostly adopt, and it answers capitally. Some of the frames for our hotbeds are 8 ft. by 6 ft., while others are only half that size. The hotbeds, which consist of about equal parts of long manure and leaves, are built up firmly to 3 ft. high at the back and 2 ft. in front. On this the frame is placed, and then soil suitable to the requirements of the seed to be sown is spread all over the inside of the frame to a depth of 6 in. This is made firm and smooth on the surface, and then the seeds are sown, afterwards shaking a little soil over them through a fine sieve. One of the largest sized frames sown in this manner with *Lobelia*, *Pyrethrum*, *Stocks*, *Phlox Drummondii*, *Tagetes*, *Verbena venosa*, or similar bedding plants, contain many hundreds of seedlings, and when the seed is good and not sown too thickly the majority may be kept in the frame till bedding out time has arrived. Air is admitted by degrees as the plants grow and the weather becomes mild, and, in April, according to the weather, the lights may be taken off altogether. Those who have only one frame may sow many seeds in it, making a little patch of each. The seeds germinate much more freely treated in this way than in pots, where there is always danger of their becoming dry, and thereby being severely checked. The plants, too, grow much better, when young, in frames than in pots, and the labour saved in not having to shift them is great, not to speak of the space left vacant in other houses, owing to not having to accommodate such plants. We find a mixture of fine loam, old Mushroom manure, or leaf-mould, well decayed, with a little river sand, to be a good mixture in which to sow all kinds of small seeds, as the latter not only germinate freely in it, but the young plants grow well in it afterwards. In propagating by means of seeds, as many do, in pots, it is necessary that the pots should, in the first place, be well drained, and it is not good to use them smaller than 6 in. in diameter. When less than this the soil in them becomes so soon dry that the young seedlings may receive a check at any hour. Pans about 4 in. deep, and 1 ft. or more in width, are also used for seed sowing, and very useful they are for the purpose. Like pots, they must be well drained, and over the

drainage should be placed a layer of Moss, or some rough material, before filling in the soil. Rough material may be put at the bottom, but it is necessary that fine soil should be on the top in which the seed is sown. To prevent the soil from becoming quickly dry it should be pressed very firmly, and, in order to insure quick germination, the pots may be plunged in a slight bottom heat. Failing this, let them be set in a warm house, with the mouth of the pot covered over with a piece of glass. In sowing seeds in pots as the spring advances, it is a good plan to put a sheet of paper over the glass until the young plants are through the soil. Primulas are as much benefited by this as anything which we have tried. In raising plants from seed in small pots, it very often happens that they are allowed to grow into a close mass before they are thinned out or transplanted. This ruins many by drawing them up with long stems, and checks them severely when planted singly by themselves. To avoid this, and to secure sturdy young plants from the first, at least one-half of the young plants should be carefully drawn out as soon as they are large enough to be handled and planted at a suitable distance apart in pots, boxes, or frames. Fifty plants of this kind will be worth 200 close-grown ones at planting out time. All seeds from which flower garden plants are expected should be sown about the beginning of February. This also applies to *Stocks* and *Asters*, as these are very often sown too late to give them a fair chance of blooming fully before being cut off by frost in autumn. Early vegetables, as well as flower seeds may all be advantageously propagated in the same way. For Cauliflowers, Celery, Leeks, Radishes, Carrots, &c., nothing surpasses the hotbed and frame. When seedlings which have to be planted in the open ground are raised in pots, plant them on a hotbed as soon as they are large enough to handle, as they will grow more freely there than anywhere else; besides, when in a frame they are always near the glass; consequently, they can be grown dwarf, and as air can be freely admitted at any time or in any quantity, they may be planted out at any time desired. CAMBRIAN.

GARDENING FOR THE WEEK.

Indoor Plant Department.

Brugmansias.—Where large greenhouses or conservatories exist, these stately, free-flowering subjects are most effective, few plants being more imposing than they are when well furnished with large trumpet-shaped flowers. In no way have they a better appearance than when grown as standards on stems 4 ft. or 5 ft. in height. Where there are plants of these, if not already of this shape, they can easily be trained to it by cutting the side branches away and reducing the head to the form required; if placed in a newly-started Vinery or Peach house, where they will get a moderate amount of warmth, they will break freely, after which they can be shaken out, repotted, and grown on preparatory to being turned out-of-doors for a time in the summer.

Clianthuses.—*C. Dampieri* is seldom seen, yet it is one of the most distinct and gorgeous greenhouse plants in existence, and no doubt would be more generally cultivated, were it not that it refuses to grow under the treatment with which the majority of other subjects succeed. Plants, raised from seed last summer, now in single pots, should have a good light position, with a temperature of 40° or 45° by night, to encourage both top and root growth, so that they may be in good condition early in spring for having one shift given them, a system by which alone I have found them to succeed well. *C. paniculata* and *C. magnificus*, which some growers prefer, unlike the first named, can be kept on for a number of years. Examples that bloomed last summer should now be cut back more or less according to the size they have attained, and that which it is deemed requisite to grow them to; if at the same time they are syringed freely with a solution of Gishurst, it will destroy any fugitive red spiders, or their eggs, that may happen to be upon them. It may, perhaps, not be generally known, that *C. magnificus* is one of the best and most distinct plants for cultivating in a window, if the simple precaution be taken of syringing it freely with clean water every week or ten days to keep it free from spider.

Mitrisaria coccinea.—This handsome old-fashioned plant has much to recommend it, although never clothed so profusely with flowers as some of the more ordinarily grown subjects, yet the length of time that it produces its glowing mitre-shaped blooms, compen-

sates for want of profusion at any one time. It is equally adapted for either large or small houses. Plants that have flowered through the autumn, should now be cut back and kept a little close, so as to induce them to break previous to repotting; the young shoots, when a few inches long, will be suitable for propagation.

Swainsonas.—Where these are grown to clothe a pillar in a greenhouse, for which purpose they are well adapted, they should now have their branches shortened back at different heights to cause their breaking in a way that will furnish them with healthy young flowering shoots from the base upwards. When grown as trained pot specimens they will require cutting in a like manner.

Coronilla glauca.—Young plants of this struck from cuttings last year should, in common with other young stock of a similar character, be kept a few degrees warmer than an ordinary greenhouse, stopping the leading shoots to get them to break in a way that will secure a bushy habit. Where a few of such things as the above are grown they will give little more trouble than the more usually met with subjects, and they at once elevate the greenhouse above the level of simply being a receptacle for a few families of the commonest plants.

Hovea Celsi.—This most beautiful of Pea-blossomed subjects, with its unsurpassed purplish-blue flowers, is one of the very best plants for training on an end wall in a corner, or up a pillar of a greenhouse, where it can be left to assume its naturally erect habit without stopping or heading down. Young, healthy trade plants that have not been so long confined in the pots as to stunt the roots, if procured now, and kept for a few weeks in the greenhouse, will be in a condition for moving onwards. I may here remark that young, hardwooded plants, the propagation of which is ordinarily left to those who grow for sale, where required, should be got in without delay, as doing this before growth commences, will enable their being potted sufficiently early to permit of a full season's growth being made, by which means the breakage and injury to young, tender shoots, and also loss of time, are avoided.

Old Fuchsias.—Young plants of these are much more effective than old ones, unless the latter are very differently managed from the way they are mostly seen, for, in cutting back the old stems, the knife is frequently not used freely enough, whereby the young growth that is formed is with difficulty made to hide the old, bare wood. Another cause why old Fuchsias do not break in a manner to furnish them sufficiently, is the bad usage they often receive by thrusting them under stages, or in any out-of-the-way place, during the winter; such treatment, to prevent their keeping on growing, necessitates the total withholding of water, by which means all but a few of the thickest roots perish, the result being that when top growth commences there is not enough root power to support it. Plants that have been treated in this way, and which, through the absence of any young ones struck last summer, must needs be fallen back on, I should advise to be cut down much lower than they usually are, say to within 12 in. or less of the collar, placing them in a genial, growing temperature, but previous to that see that the soil is fairly moistened.

Fuchsias from Last Year's Struck Cuttings.—Where the course is followed of annually striking cuttings about August and keeping them growing on slowly through the winter, though they may not bloom quite so early as the old plants, yet they will be much fairer to look upon when they do flower; but there is one point in their cultivation not to be lost sight of, that is, they must always have more root room given them before they get pot-bound, as this has a direct tendency to induce a hard condition of the wood, which will have a greater disposition to bloom than to attain the requisite size before flowering commences; consequently, they should now be examined, and, if necessary, at once moved into larger pots, using good loam made tolerably rich and not too much sand in it, potting them so as to make the whole mass pretty firm, which will have the effect of producing shorter-jointed wood than that which results from the soil being left comparatively loose and open in the pots. Keep them close to the glass where they will be fully exposed to all available light, in a temperature of from 45° to 50° in the night and proportionately higher by day, according to the state of the weather, stopping the shoots as occasion requires. One stick to the leading growth will be sufficient, as a well-managed Fuchsia, grown in the usual pyramidal style, does not need more than this.

Berry-bearing Solanums.—Where the pseudo-capsicum variety of these plants is grown from seed of even a good strain, a few will be found very much superior in their general habit and the freedom with which they produce their fruit, and if these are selected alone to propagate from, the stock will be more satisfactory. If plants have not already been struck, no time should now be lost in

getting them in, otherwise they have not time to attain a useful size so as to enable their carrying a full crop of berries; they will root in a few weeks in a moderate heat. Where they are to be grown from seeds this should now be sown and every means taken to get them on without delay. Plants of last year, or older, that ripened their berries earliest in autumn and have now got shabby, should at once be cut in freely and placed where they will receive the temperature of an ordinary greenhouse, as they are no better for being stimulated by heat. If they are well managed through the summer, either by shaking them out, repotting, and growing on in the pots plunged, out-of-doors, or, still better, planted out, provided this is done early enough to get them into bloom, they will set a crop of fruit that will get fully ripe and coloured soon in the autumn. Standard examples grown on stems from 1 ft. to 2 ft. in height are very effective amongst other things. The favour which this Solanum has found has, with many growers, thrown the old *S. capsicastrum* into the shade, yet the latter is a more elegant plant and quite as deserving of cultivation as the erect-habited kind. It will succeed treated similarly in every way.

Callas.—Plants of these that were forced into flower to come in at Christmas, should, where so large as to require it, now be divided, placing the crowns one in a pot, as in no way do they look so well, or are so useful as grown singly. By dividing them thus early, and putting them where they can at once commence growth, the strongest ought to be in a condition to bloom correspondingly soon next autumn.—T. BAINES.

Flower Garden.

Auriculas.—The frost has not yet given way sufficiently to allow of any development on the part of the plants. If a good rest be beneficial to them it has certainly been obtained this year. The outer leaves continue to decay, and it has not been easy to get at the plants to remove. As soon, however, as the frost gives way, the whole should be overhauled, and the surface soil removed, to be replaced with the rich compost previously recommended. A Lancashire grower, writing a week or two ago, is puzzled to know why I recommend protecting the plants from frost so early in the year. The only reason I can give is the exceptionally severe winter. Until this year our plants have never been covered until after they were top-dressed in February, when I found the leaves thickly crusted with frosty particles, and ascertained that this could be prevented by placing mats over the glass it was done. The grower in question found that the leaves of his plants were dry when the ventilators were open night and day, but he does not approve of allowing the keen, frosty wind to blow upon the plants. Still watch for insect pests, as they do more mischief this and next month than at any other season.

Carnations and Picotees.—Read up what was stated last week concerning these, and see that aphides are destroyed by fumigating. Admit plenty of air whenever the weather is favourable, sometimes even removing the lights entirely. Perpetual-flowering Carnations and yellow ground Picotees, such as Prince of Orange, Oscar, and Ascot Yellow, should now be propagated by slipping off the small side growths, and inserting them in 5-in. pots in light sandy soil. The pots should be placed in a propagating house or hot-bed.

Dahlias.—Refer to last week's remarks concerning preparations for propagating. If there be no other convenience for this than the ordinary garden frames, some fermenting material must be prepared for that purpose without delay. Many have no choice, and can only obtain stable manure. This is certain to heat, and that violently, but it does not last long. I have obtained a steadier heat from worthless Tussock Grass cut from a wet meadow and mixing it with the manure. The best material is leaves and manure in equal proportions; the whole ought to be thrown into a heap and turned over twice, viz., six days after the heap was formed, and six days after it was turned. In a few days more the bed may be made between 3 ft. and 4 ft. high. Put in about 6 in. of leaf-mould or Cocoa-nut fibre refuse, and the frame will be ready to receive all sorts of cuttings.

Hollyhocks.—Cuttings or root-grafts may also be propagated on a hotbed such as that described; they must be taken from the plants as soon as they are ready for removal. Exhibitors need not be told to get beds or borders prepared for their reception by trenching, for this has no doubt been done long ago, and the soil will have been tempered by exposure to the winter's frost. If such work has not been done see to it as soon as the frost breaks up.

Pansies.—Those in pots in well sheltered positions and in frames protected by mats are beginning to make some progress, and they would make good progress if we could get a glimpse of sunshine for an hour or two each day, but near London this has not been the case.

If the plants be not yet in their flowering pots see that that is so at once. Those that have been potted must be kept fairly moist at the roots.

Primula cortusoides amena.—The sight of the tender young leaves of this beautiful Primrose, with their accompanying flower trusses in course of development, is most satisfactory to the cultivator. If the plants are in frames see that they do not suffer from want of water, and it is desirable not to allow frost to reach them. If the plants be in the greenhouse see that red spider does not attack the leaves.

Tulips.—When the frost breaks up these will most likely develop rapidly. At present most of them have their heads hid underground. Our rainfall last year was but 29 in.; during some seasons it is not over 21 in. In districts where this amount is doubled, or nearly so, some sort of covering is necessary to throw off such an excess of wet. If this has not been done many bulbs will suffer owing to their not starting rapidly enough. Under such circumstances the value of beds raised 9 in. or so above the surface, also deeply trenched and well drained, will be apparent. Those who have old frame lights to spare will find that they answer better than anything else for throwing off wet.—J. DOUGLAS.

Public Parks and Open Spaces.

Borders which contain herbaceous plants must at this season be carefully looked over, otherwise many which are making underground growth, being tender, are liable to attacks from slugs and other insects. A light dressing of salt, soot, gas ashes, or even common furnace ashes, will be found very beneficial in preventing injury. As a rule herbaceous borders are out of place round shrubberies and plantations, the shrubs in which, if judiciously planted, should be allowed to form the outline. Nothing can be more in conformity with a natural landscape than the easy sweep of many of our evergreen shrubs when allowed to form themselves to the turf, resting upon it, as it were. A herbaceous border may with propriety be placed by the side of roadways where a belt of trees and shrubs has been planted to shut out buildings or other objectionable features; the border should be ample, not less than 10 ft. to 15 ft. in width, and composed of rich materials, as, where trees and shrubs are growing near, the soil is rapidly impoverished. The frost and outting winds will have injured many shrubs more or less; it will, however, be better to wait until the end of the month before any attempt is made to prune away injured portions. Those who contemplate planting trees on street margins should do so before the end of this month. Lawns will require special attention during this month; they should be well rolled on every favourable opportunity, in order that the soil may be kept tightly to the roots, every frost having a tendency to raise the surface. Should Moss exist in the Grass, which as a rule denotes bad drainage, it is well to thoroughly rake over the surface, uprooting the Moss, and then sweeping it off with brooms nearly worn out. A mixture of fine lawn Grass seeds should then be sown, and a fair sprinkling of rich soil, sifted fine, thrown over the surface. Seed should be sown at the rate of one to three bushels per acre, according to the state of the plot treated; it must then be brush-harrowed, and firmly rolled down. Much benefit will be the result if this work be well done. In all populous towns this is an annual operation, inasmuch as the state of the atmosphere is very destructive to Grass. As soon as the Grass shows signs of growth, the mowing machine or scythe should be brought into use; this if done as early as possible and at least once a week, will improve the Grass. A mixture of soot, salt, and lime spread over the surface at this season, will do much to deepen the colour of the Grass and destroy many injurious insects. In towns where it is desired to have an early display of certain varieties of annuals, it is necessary to sow some seeds in pots, and place them in cold frames plunged in coal ashes or similar material; in this way the smoky, damp atmosphere and also the ravages of birds may be successfully combated, as when the seedlings are strong enough to withstand these baneful influences, they are transplanted into the open ground; seeds of the more hardy varieties may also be sown out-of-doors towards the end of the month. Should any plants of perennials remain in the nursery beds, they should be planted out on the first favourable opportunity; thus Acanthus, Fennels, Geums, Sweetwilliams, &c., may be transplanted very successfully. Walks and roads upon which weeds have been troublesome during the preceding summer, should be lightly broken up with a pick, and the surface which will be found to consist principally of soil and decayed weeds, should be raked off. A thin coat of fine gravel spread over the surface will, when rolled, give them a clean and fresh appearance; if, before the gravel is put on, a sprinkling of salt, or a good watering with carbolic acid and water, one of the former to ten of the latter be given, it will very much assist in preventing the growth of weeds during the year. Care must be taken, however, that neither salt nor solution is applied near Box, turf, or other growing edgings. Tar-paved walks are free from these objections, and are well worth a trial. The month of February will afford an excellent opportunity for clearing out any accumulations which exist in lakes. If the water can be easily run off, the mud will soon be in a condition fit to be wheeled out in barrows. A little lime thrown over the surface will prevent any disagreeable exhalations; should there be any signs of leakage in banks or bottom, clay puddle, concrete, or other suitable material, should be used as a preventive.—CHARLES DENNIS, Southwark Park.

TREES, SHRUBS, & WOODLANDS.

PINUS LARICIO.

I AM not sure that Mr. Baines (p. 106) is right in concluding that prejudice is the only reason why *Pinus Laricio* (the Corsican Pine) has not been planted more extensively in this island. I have had a short experience of the tree, having commenced planting in 1868, when I set to work to learn the history of all the trees enumerated in nursery gardeners' catalogues. The splendid specimen of *Pinus Laricio* at Kew had attracted my notice, and as I read that the tree produces valuable timber, that it is proof against the attacks of rabbits, that it is quite hardy in all situations, of very rapid growth, and handsome robust habit, I determined to include it in my planting. I have planted several hundreds in various situations in the last ten years, and am glad for the benefit of others to give my experience. The statements about hardness and rapidity of growth are quite correct. *P. Laricio* grows faster than any other Conifer I have tried, including *Abies Douglasi*, and *Wellingtonia gigantea*; its average annual increase in height has been more than 2½ ft. The statement about its being proof against the attacks of rabbits must be received with some limitation; rabbits do not like its bark or leaves so well as those of most other Conifers, and will only attack it when hard pressed. It is curious to see how much they prefer the closely allied species *P. austriaca*. In my experience I have found only three plants quite proof against rabbits; viz., the *Rhododendron*, the Yew, and the Box. But there are objections to *P. Laricio* which I must now mention. First, it is difficult to establish. Those bought from nursery gardens, if of a sufficient size for planting out, generally die after transplanting. I bought several lots from different nurseries, of which hardly one survives. I then bought a two-year-old lot in a seed-bed containing several thousand, moved them to my own nursery, and though a large proportion died I saved enough for a good stock. By transplanting them every year I found I could do well with them, but not otherwise. If left unmoved for two years, they make a large top-bearing shoot, and will not move well. Their root is small, weak, and shallow in proportion to their upward growth, and this is the cause of another, the most serious objection of all. Of those I have planted in various spots, half have been blown down when they reached a height of from 15 ft. to 20 ft.; it is a tree, therefore, which will not do in any place exposed to high winds. If planted in a mixed plantation it outgrows its neighbours, and, having half smothered them, completes their destruction by falling upon them. I am told, however, that this rapidity of growth ceases after a few years, and that at the age of twenty or thirty *P. Laricio* is often passed by Scotch Fir of the same age. I have also heard that it was planted to some extent when first introduced, about the middle of last century, and found to be a failure. I should like to obtain more information on these points. Have any of your readers seen a plantation of *P. Laricio* thirty or forty years old? and, if they have, how does it compare with Scotch Pine in the same neighbourhood.

Edge Hall, Malpas.

C. W. Dob.

—In many situations *Pinus Laricio* beats the Scotch Fir. The latter is also one of the most useful of trees, far preferable to Larch, which is now so subject to disease as hardly to be worth planting. The *Pinus Laricio*, as a rule, also escapes the ravages of rabbits; this renders it still more valuable in exposed localities. I have recently seen some beautiful plantations of this *Pinus* planted from seven to ten years ago. It grows very fast, and is one of the hardiest, as well as one of the most useful of all the Firs.—D. T. Fish.

Facts about the Japanese Persimmon.—The Japanese Persimmon is a dark-stemmed tree with large glossy leaves. It seems to somewhat resemble, in its method of growth, an Angiers Quince tree, but the leaves are larger, and the tree is handsomer. It buds and grafts readily. The fruit is produced on the new wood of spring growth, blossoms appearing in April, the fruit not being fit to

gather until after the leaves fall. The fruit is not usually good until it has lain in the dark for some months, and has become soft. The trees are hard to transplant, unless great care is taken. It appears probable that the Persimmon prefers a rather moist location. It promises to be an immense bearer. One orchard of 1,200 trees, planted for market, lies near San Jose.—C. H. SHINN in "Country Gentleman."

WINTER-BLOOMING HARDY SHRUBS.

Chimonanthus grandiflorus.—This most fragrant and free blooming of all winter-flowering hardy shrubs is now about at its best in a rather sheltered corner of my walled-in kitchen garden, and is most useful for cutting from now that there is such a scarcity of any kind of flowers, and its blooms last many days in perfection in water after they have been taken from the tree. This large-flowered variety of the better known and much more generally grown ordinary *Chimonanthus* (or, as some still call it, *Calycanthus præcox*) is in every respect superior to it, and much to be preferred to it, as, in addition to the individual blooms being very much larger in size, they are also much brighter, being deep straw coloured, whereas those of the ordinary variety are only dull white, of a somewhat dingy hue. It is also a very much more abundant bloomer, an almost equally large bush at the opposite corner of my garden of the common variety having only an odd bloom here and there scattered over it, whereas the large-flowered kind is literally covered with bloom from top to bottom. The perfume much resembles that of a Jonquil.

Hamamelis Zuccariniana.—In addition to the curious and pretty *Hamamelis arborea* mentioned (p. 101) by Mr. Ewbank (and which is also now in bloom with me) there is another variety of this curious family, *H. Zuccariniana*, which is, I think, even more profuse-blooming than the first-named variety, though somewhat later in opening its blossoms, which are also slightly smaller in size and of only one colour, pure golden yellow, being without the internal claret-coloured cup possessed by the flowers of *H. arborea*. In about a week's time from this my plant of *H. Zuccariniana* will be covered with its tiny, golden, starry blossoms. I may add that it is to be obtained from the same prolific source from which Mr. Ewbank obtained his plant.

W. E. GUMBLETON.

RATE OF GROWTH AND QUALITY OF TIMBER.

This question is now getting, as discussions of a similar nature often do, obscured through importation into it of a good deal of irrelevant matter. "C." says "I surely do not mean to assert that the trees, whether exotic or otherwise, which are grown for timber in this country, are governed by different laws from those to which they are subject elsewhere." If in this "C." means to say, and his words admit of no other interpretation, that the nature of the wood of a tree, in other words, its quality, is not influenced by the soil and climate—country if you will—in which it is grown, he makes an assertion that will surprise most people practically conversant with timber. Most emphatically do I say that the quality of wood, and to a very great extent, is influenced by soil and climate. Further, in mentioning the constituent parts of which timber, like other vegetable matter, is composed, "C." falls into another error which points to his deductions being drawn from theory alone. He speaks of the fibro-vascular tissues as being strong and enduring, of which any one acquainted with the subject, even remotely, is aware. But does "C." mean to make out that the strength and endurance of all vegetable substances are alike in proportion to the quantity of this fibre present? It is just such mistaken conclusions as this upon which nine-tenths of the fallacious theories rest that are thrust upon the world, and which are expected to be taken unchallenged. I have, through a tolerably lengthened acquaintance with the growth and uses of a considerable number of plants from timber trees down to things of much smaller growth, been pleased to find the hypothesis of the physiologist, in accordance with the results of actual experience, but I have very often found them far from being so, and in nothing so much as in the assumed and real qualities of many kinds of timber. The extreme cases mentioned by "C." of the difference existing in the strength of the wood of different trees of the same species—produced on the one hand under free, healthy conditions of growth, and on the other resulting from a stunted, unhealthy state—have, as any impartial observer can see, nothing to do with the question.

T. BAINES.

Pernettya mucronata in Devonshire.—When I took charge of the gardens here, twenty-one years ago, we had only one plant of this beautiful shrub, which has annually had its branches heavily laden with berries. It is now 6 ft. high, and occupies a terminal

position in front of a large group of shrubs. From a small branch, thickly set with berries, I saved the seed, and raised in pans in a garden frame a large number of seedlings, many of which are now good-sized plants. These, even when small plants in nursery beds, fruited freely. We use them for foreground plants in clumps or groups of shrubs, and with good effect. These *Pernettyas* have a tendency to make shoots yearly upwards of 2 ft. long; these should be shortened back so as to induce a thick, dwarf growth, on which the berries are most freely produced. The plants require protection from hares and rabbits, which are very fond of them. Galvanised wire netting placed round them answers that purpose until the plants are sufficiently large to stand uninjured. They grow very freely here in light loam, and throw up quantities of suckers from which plants may be reared. These *Pernettyas* are very useful for furnishing cut flowers in spring and in winter; the berries are suitable for ornamenting vases, that is, if protected from birds with a piece of netting. Varieties which grow very freely and strongly have never produced a berry here, although in the same ground and under exactly the same treatment; much, therefore, depends upon having the true variety of *P. mucronata*. It is perfectly hardy, having withstood the winters of 1860 and 1866, and the late hard weather quite uninjured.—J. GARLAND, Killerton, Exeter.

HARDINESS OF THE HYDRANGEA.

I was just going to criticise "a Retired Gardener's" remarks under this title (p. 42), but on reading them through I find they come to the same conclusion which I have long reached; viz., that the *Hydrangea* is not hardy except in the southern counties. It will certainly live out-of-doors, but it will neither thrive nor flower to any useful purpose. Such at least is my experience with it in East Anglia; I have even tried protecting it, but to no good purpose. Your correspondent is quite right about Devonshire being the place for *Hydrangeas*, huge bushes of it rising to the size and importance of shrubs, some flowering blue, others pink, have a magnificent effect in beds, borders, or in front of shrubberies. But the place for *Hydrangeas* in most other parts of the kingdom, is the cool conservatory or window garden. Plants in 8 in. pots with half-a-dozen large blooms, are highly ornamental; but, perhaps, small single-stemmed plants are even more beautiful. A good way of preparing these, is to insert cuttings of the strongest roots either in the autumn or early spring. They root very soon in a gentle heat, when they should be shifted into a 6 in. pot, using equal parts of loam and well rotted manure. Place them close to the light so as to keep strong and sturdy, as well as dwarf. Plants so treated and never allowed to flag, will throw enormous tresses of bloom almost covering the leaves, and look remarkably well. To insure blue flowers, obtain soil, either peat or loam, from a district which changes the flower to that colour. The use of steel filings or the iron sparks from a blacksmith's anvil mixed freely in the soil, will sometimes change the flower to a blue colour and sometimes not.

D. T. FISHER.

The Gladwyn v. Holly Berries.—The *Holly* being rather an uncertain fruiting plant, I would recommend all those who require berries for purposes of decoration at certain times of the year to plant the *Gladwyn* (*Iris fæidissima*). This, once established, will take care of itself, and never fail to produce beautiful pods filled with coral-like berries that are always acceptable. Although, like many other plants, it does best in a good situation, yet it will make itself at home anywhere in shrubberies where it can get light and air. The seeds do not vegetate the first season; therefore it is best to sow them where they will not be disturbed and the plants will come up in abundance the next spring. In some localities it grows wild, and both plants and seeds are plentiful. When past its best for decorating purposes, I scatter the seeds in the shrubberies, where we get plants by the hundred. Rabbits will eat them in their young state, but not after they have become well established.—W. DIVERS, Wierton.

Nursery and Seed Association.—We have received from Mr. Charles Lee, the Treasurer, the second annual report of the Committee of Management of this Association, the objects of which are to protect and promote the business of nurserymen, florists, and seedsmen in the United Kingdom and abroad; to collect and disseminate information calculated to protect the members of the Association from fraud; to arrange for the speedy and economical collection of debts due to members; the establishment of unity amongst those interested in the welfare of the nursery and seed trade; the encouragement of the interchange of opinions on questions of importance relating to such trade; the doing of all such things as may be incidental or conducive to the attainment of the above objects, and all such objects as may from time to time be determined by the Association.

THE INDOOR GARDEN.

TOBIN'S SYSTEM OF VENTILATION.

FROM what I have seen of this system as applied to dwelling-houses, I do not see the least difficulty in applying it to hot-houses for winter ventilation; I am afraid it would not be sufficient in summer. The plan surpasses any other yet tried of admitting air without injury to the inmates of the structure, and has proved a complete success in houses and public buildings where it has been adopted. The idea, I am informed, was suggested to the discoverer in the following way, which will give one as good a notion of the principle of the system, as any description that could be furnished. Mr. Tobin was watching a strong stream of water, from a pipe, running straight into a tank at one end, and observed that the current from the pipe did not mix with the water of the tank on entering, but rushed direct towards the other end, against which it struck and then spread out right and left, with decreased force, and gradually flowed back along the sides of the tank to the end where it had entered, but with scarcely any perceptible disturbance of the water; many a one must have noticed the same thing. The tank represents the room to be ventilated; the end where the water enters the floor, and the opposite end the ceiling. If we suppose that the pipe carried half or two-thirds of the way up the tank, instead of terminating at the end where it enters, we have the Tobin system complete. In a hothouse the usual top ventilators would remain closed, and the fresh air would be delivered above the tops of the plants or a little below the roof, and would gradually descend to the floor among the plants. Exactly the same thing takes place when a smoking-pan is set down on the floor of a hothouse, and the top shutters are closed. The smoke ascends in a straight column to the roof, and then rolls down the side of the house till the latter is filled to the floor. The Tobin system might be applied to hot-houses—particularly span roofed structures—with the greatest ease, and the expense of adopting it would hardly be worth mentioning: simple methods of applying it will suggest themselves to any one.

Speaking of ventilation generally I am of opinion that the evils attributed to our present methods of ventilating are greatly exaggerated. In plant houses where the plants stand close to the side ventilators, it is necessary to exercise care in opening them in cold weather, but that is seldom or never necessary, as a little air at the apex of the roof will generally be found sufficient, and ventilation can be given there during the coldest weather without injury to the inmates, as is demonstrated by every-day experience. As to the evils that are said to have been wrought in fruit houses by the present system of giving air at the lowest and highest points of the houses, particularly front air, I must say I never had any experience of them, and I doubt if any other system will be devised that will meet the end in view so well, all things considered. As to front air it may appear heterodoxical to assert that admitting air at the front of the house is safer, even in cold weather, than admitting it at the top; but I believe that is so myself, and I have acted on that belief for many years, and found it to be the best plan. Muscat Vines, when in flower and just at the setting period, are considered about as sensitive subjects as any that one has to deal with, but I should be perfectly willing to let any one regulate the ventilation by the front shutters during the whole of the season without fear of rusty berries, bad setting, or any other mishap. One practice in all our fruit houses is to open the top ventilators an inch or so, and afterwards regulate the temperature by the front shutters; that is when ventilation becomes necessary, for I do not believe in creating the necessity by giving too much fire-heat. Still, in such cold, dull weather as we are experiencing just now we fire up sufficiently to enable us to admit a little air.

J. S. W.

Hardy Primroses under Glass.—For several winters I have had coloured varieties of garden Primroses in bloom more or less the whole winter through. Fearing a sharp winter, I lifted a number of plants and replanted them under glass in a temperature of from 40° to 45° and they have well repaid the trouble by a fine display of bloom, while those that are out-of-doors still look as if spring was yet in the remote future.—J. G., *Linton*.

BOTTOM HEAT.

MR. SIMPSON does not take the usual course of directing his objections to what I have written on this subject to the paper in which the article appeared, where, in its entirety, it could speak for itself. If Mr. Simpson had a single practical proof to advance in support of his views, he would not be put to the straits of quoting the Chiswick records, which, as he knows well, relate to our own country, where the conditions of earth and air temperature are so different from those of the countries from which come the plants which we grow under glass in heat. When I first began plant growing I read everything I could lay my hands on bearing upon the subject of temperature in the countries from which the various plants that I cultivated came, but after shaping my practice in conformity with the theoretical conclusions held by those who wrote on these matters, I found that I could grow them very much better by treating them in accordance with what I had proved to be better suited to their requirements, the details of which I gave fully in the communication from which Mr. Simpson quotes, and, moreover, the plants, not few in number, nor confined to a few families grown under the exact conditions which I there described, were, for a considerable number of years, seen by the majority of people connected with gardening pursuits. There they were to give evidence far more unmistakable than Mr. Simpson's borrowed theories, to which, during the two years this discussion, in one shape or other, has extended, he has persistently clung, without an atom of proof to sustain them more substantial than the untenable doctrine that because there are some plants from warm latitudes that succeed better with bottom heat than without it, all, or even the majority, do so, totally oblivious of the fact that the habits and requirements of the plants from any given country are as different often as their external appearances. I may remind Mr. Simpson that reiterated assertion, however long persisted in, will never upset an accomplished fact. When I was Mr. Simpson's age I suppose I had had about as much experience in plant growing as he has had, and I was as staunch a believer in the use of bottom heat as he is, but I did not shut my eyes to facts that came before me, some resulting from accident others from experiments attentively observed. All I have said on this, as on any other subject upon which I ever write, I have previously proved in a way that does not admit of mistake, and in the case of bottom heat not once, twice, or thrice, but over a series of years, with a large number of species of plants. A considerable number of the best plant growers in the kingdom know, from what they saw when they used to call upon me, that for many years during the latter portion of the time I was engaged in plant growing none were ever subjected to bottom heat in any way whatever. Can Mr. Simpson controvert this? If he can, he will do more to make out his case than all the theories he can rake up from the writings, or conjectures, of other people. In what I have written on the subject, I have done nothing more than simply state the results of my own practice, which was already as well known in all its details to many as it was to myself. There were the facts of the case, and whoever felt disposed to test them might do so. Had Mr. Simpson done this, and failed after a fair and impartial trial, the objections which he has raised would have some show of reason attached to them. Whatever objection Mr. Simpson might raise against the theory connected with the subject I have advanced, he cannot ignore the indisputable facts afforded by the plants I so long cultivated, under conditions exactly in accordance with what I have written.

T. BAINES.

PLANT AND FRUIT CULTURE COMBINED.

IT is an old saying that plants and fruit cannot be grown well together, but no assertion could be more incorrect, and the wider it is made known that the very opposite is the case the better. In support of this, perhaps I had better state my own experience in the matter first. Our Vineries, Pineries, and Peach houses here are continually full of plants of some kind or other; nevertheless, they all succeed admirably, and the fruit crops are all that need be desired. A succession of plants and flowers for a very large conservatory is constantly being obtained from the fruit houses all the year round, and not only are flowers grown in them, but French Beans in pots, Strawberries, &c., and altogether we consider this mode of utilising houses by far the most profitable. The very last thing we would think of doing would be keeping our fruit houses free from plants. Ferns do better under the shade of Vines than elsewhere, and so do all kinds of plants that are newly-potted, especially in early summer. When shelves are fixed at the back of lean-to houses, about 2 ft. from the glass, they are extremely useful for putting all kinds of flowering plants on after they are lifted from the body of the house. In span-roofed houses a shelf under the central ridge just over the pathway

serves the same purpose. Then there is an angle along the front where the sides join the roof that forms a capital place for a shelf; in fact, all who are inclined to grow plants in fruit houses will soon find out plenty of convenient places in which to put them, and where this is done there is not the slightest danger of their health being injured or anything at all befalling either plants, flowers, or fruits. Allow me to ask those who think this wrong why plants and fruit should not succeed together? and if instances can be pointed out in which either the one or the other failed when grown under skilful management? In this way, judging from what I have seen and from what I have read in *THE GARDEN*, I should say that most of the market gardeners about London and elsewhere make a regular practice of growing fruit and flowers in the same houses, and it is well known that these cultivators grow their productions to a state of as great perfection as need be desired.

CAMBRIAN.

CYPRIPEDIUM INSIGNE MAULEI.

This is not one of the newest, but it is still one of the best of the *Cypripediums*, as well as one of the dearest priced. I have reasons for thinking that *C. insigne* is sometimes grown for it, but the one cannot be mistaken for the other by any one acquainted with both; *Maulei* has much the prettier flower; it is better marked; but its distinguishing characteristic is the much larger patch of pure white on the upper petal. It is a very effective plant when well flowered, and the flowers are also good for cutting for bouquets, or at least vases of flowers. Either on the plant or in a state they last a very long time, about three months on the plant. Those who do not grow Orchids as a speciality, but only such as can be grown well and easily amongst an ordinary collection of stove or intermediate house plants, should find a place for this *Cypripedium*. Like most of the species, it does not fail to grow vigorously and flower freely, unless absolutely ill-used. Old plants of it divided into pieces with roots to each will soon furnish a good stock of plants. Some growers recommend pure fibry peat as a compost for *Cypripediums*, others Sphagnum chiefly, but I remember Mr. Parker, of Tooting, telling me that they liked a more substantial diet if they were to flower well, and since then I have potted our plants, different strong-growing kinds, in good fibry loam, peat, sand, and obarcoal, and in this compost they root and grow with great vigour, and flourish much better than they did in peat alone. They must, however, have plenty of drainage, and not be placed in a deep potful of soil which becomes inert beneath the plants, as the roots do not enter it but keep rooting near the surface.

J. S. W.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Plants for a Small Greenhouse.—There is a wonderful variety of plants that do well in a cold greenhouse. A temperature of from 35° to 40° is excellent for winter purposes, except that in such a temperature it is not possible to have in midwinter other than the hardest and earliest plants in bloom. Roman Hyacinths, Christmas Roses, Primroses, Camellias, *Primula denticulata*, &c., will yield the very earliest bloom in such a temperature, and to these will follow Chinese Primulas, Cyclamens, Cinerarias, and herbaceous Calceolarias, all of which will live well in a cool house through the winter, provided frost be excluded. Genistas, Coronillas, Deutzias, *Dielytras*, and Early Azaleas follow in succession, and furnish an abundance of bloom. For the summer season the best plants are show and zonal Pelargoniums, Fuchsias, Balsams, Begonias, and similar plants, all very gay and decorative and easily managed. These will keep the house gay until autumn, when *Chrysanthemums*, *Solanums*, &c., might terminate the year. To these an abundance of plants can be added, but the dimensions of a small house are so limited that it would be useless to suggest, more especially for summer decoration, where a Vine in foliage will exclude light and render the cultivation of plants difficult. A quantity of hardy early spring flowers, such as bloom naturally in the open ground in March and April if lifted into pots and placed in such a house early in winter, will commence to produce bloom much earlier, and prove most valuable for decoration before other and tenderer plants have commenced to flower. A few Roses in pots brought into the house early will bloom a month before those out-of-doors. These can be returned to the open air as soon as the bloom is over. A few tree Carnations in pots will yield winter bloom, and furnish some fine "button-holes." Common Auriculas in pots are pretty on a front stage, and do admirably with Chinese Primulas and Cyclamens. The obtaining of flower all the year round is difficult to accomplish without strong artificial heat, but the plants named above, if properly treated—a

matter, be it understood, of the first moment for their welfare—will give a very long season, although the artificial heat be wanting.—A. D.

—Among Mr. Groom's useful list of conservatory plants (p. 96), I am rather surprised to find the two *Hedychiums*, coronarium and *Gardnerianum*, and *Monstera deliciosa*. Had not Camellias, Azaleas, &c., been named in the same connection, one would have thought these were meant for the summer furnishing of the conservatory. Of course a good deal depends on the temperature. But as not a few this winter could not keep their conservatories above 40°, such plants, and even the harder *Ficus elastica*, would have looked very seedy, had they been subjected to such a low temperature; few plants pay better on a general warm temperature than the two *Hedychiums* here named and the *Monstera deliciosa*, which deserves a warm house and a tank to itself, alike for the unique character and beauty of its leaves, and the high quality of its luscious fruit. D. T. FISH.

THE KITCHEN GARDEN.

CROPPING KITCHEN GARDENS.

THE commencement of a new year is a good time to begin noting down anything that is worth remembering in the daily events that are constantly occurring in all gardens. Habits of order and method are fostered by it, and much useful information is gathered together that will have an influence for good in after life. The natural conditions of no two gardens are exactly alike; hence the necessity for constant thought being brought to bear, especially upon the cropping of the kitchen garden. A well-supplied kitchen will often cover mistakes in other directions, but, as a rule, the man who can supply the kitchen well at all seasons possesses the qualities that will insure success in other departments, if he only gives due play to his energies. The great aim of the kitchen gardener should be not only to have everything of the best, as regards quality, but to have all the successional crops meet each other. A superabundance of the most superior produce at one time will not compensate for a scarcity at another. In keeping up a regular supply of vegetables there are two matters especially important; the first is to sow or plant the right kinds at the proper seasons for succession, and the second is to sow or plant just the right quantities. For instance, in the case of Cauliflowers, Lettuce, or any other crop that is apt to bolt prematurely, or, at any rate, is much influenced by the seasons, sowing little and often should be the rule, at the same time taking advantage of the various aspects of the garden to suit the different crops to the varying seasons. There is no doubt that the majority of kitchen gardens are too much shaded and sheltered by fruit trees. The best vegetables are invariably produced in the large open spaces where the air can freely circulate amongst them. A warm sunny spot under a south wall is a very desirable place for early crops, but the wants in this way are small in comparison with the requirements of the whole year. In a maggot-infested garden there should be no main crop of Carrots, but, instead, a regular succession of sowing monthly from the forced crops under glass in January till the last sowing of Early Nantes to stand the winter in the border in the first week in August, and which can be sheltered in very severe weather with a sprinkling of dry, loose litter. Good sweet young Carrots can be had all the year round in this way, without taking up more land or costing more than if the main-crop sowing had been relied on for a good part of the year's supply; and even where a clean crop free from maggots can be grown, the old roots lose flavour before the young forced crop comes in, and the plan of sowing small successional crops will be found more satisfactory. In a less degree the same remarks apply to Onions. Where the maggots are troublesome the autumn-sown crops generally escape their attacks, and this fact should lead us, if we have any doubt of our soil, to sow at least a good half of the year's supply at that season. A rough plan of the kitchen garden is a great advantage in working out the season's work; it should be drawn to scale, and the crops now occupying the ground marked on it. The more a subject is thought over the easier and simpler it becomes, and if a thing is often present in the mind fresh lights are constantly breaking in upon us, and I suppose no one is so perfect in anything as to escape the necessity for wishing or trying to improve.

E. H.

Early Peas.—In most places Peas sown in autumn, unless covered with glass, will this season be a failure, but he who takes time by the forelock will be prepared for this, and there is more than one way of filling up such a vacancy. The simplest and, perhaps, on the whole, the best, is to sow again about the middle of February as many Peas in 5-in. pots as will make good the loss. The pots may

at first stand under a stage, or in any position where a little warmth can be afforded them; but, as soon as the green tops push through the soil, they should be taken to a cold pit or frame, and have plenty of ventilation till the weather is suitable for planting them out, which will generally be about the middle of March. There are warm south borders in every garden available for the earliest crops, and if they can be planted near the foot of a south wall they will sustain no check. The planting should be done when the soil is in a good mellow condition. The sticks should be placed to the rows at the same time, and a few Yew or evergreen branches of some kind should be placed on the windward side to afford shelter. There are other ways of forwarding early Peas under cover all more or less useful, such as cutting pieces of sod about 1 ft. long and 6 in. wide, scooping out the soil along the centre, sowing the Peas, and covering with light, rich soil; then they should be placed in a frame where there is a little warmth, and, after undergoing the hardening process, planted out turf and all, without disturbing the Peas in the drills in the border; a ridge of warm, mellow soil should be drawn to each side of the rows. Early Peas should be planted rather thick, as it is not often they yield more than one or two good gatherings, and the second crop comes in so quickly after them, that they are not required for continuous bearing, even if they were adapted for it, which they are not. If the roots are broken or disturbed the crop will not be so good, as Peas do not transplant well if the roots are broken. I have sometimes transplanted them, when quite small, from boxes where they had been sown thickly, taking them up in little patches, and transferring them at once to the drills, but I have always found the less the roots were disturbed the better the crop turned out. For the earliest crop there is nothing much better among white Peas than Ringleader. William the First is a most desirable kind to sow early in the open ground.—E. H.

GARDEN DESTROYERS.

THE LACKEY MOTH.

(CLISIOCAMPA NEUSTRIA).

This well-known and common moth, though very similar in its destructive habits to the small ermine moth described in a recent number of *THE GARDEN*, belongs to a very different family (Bombycida, the family of which the silkworm moth is



Clisiocampa (Bombyx) neustria.

to lay their eggs on a small bough or twig of a tree. This they do in a very curious and beautiful manner, placing them one after another close together in a spiral line round the twig. The spirals are formed close together, so that the eggs in the second turn touch those in the first; in this way some 200 or 300 eggs are laid, forming a band round the shoot, composed of from fifteen to twenty turns of the spiral row of eggs. The interstices are filled up and the band covered with a kind of dark brown varnish, which becomes so hard when dry, that it is almost impossible to remove the eggs without the assistance of a knife or other instrument. The eggs are thus entirely protected from the attacks of birds and other natural enemies, and from the effects of bad weather. The caterpillars are not hatched until the following spring, in April or May, when the leaves are beginning to appear on the trees; they at once begin to form a nest or web of silken threads generally in some fork among the smaller branches. In this nest they live during the day, and in bad weather, and from which if disturbed they immediately let themselves fall by a thread to the ground. At night they leave the nest, and feed upon the neighbouring leaves, spinning a thread as they go, by which they return to their shelter at daybreak. As there are often 150 to 200 caterpillars thus congregated together, it can easily be imagined what an amount of mischief they commit. As they increase



Caterpillar of *Clisiocampa (Bombyx) neustria*, cocoon, and commencement of a band of eggs.

a member). The males of most of the species of this family are endowed with a peculiar faculty of discovering the females, even though they may be entirely hidden from their sight. This fact is often taken advantage of by collectors of moths, who, having obtained a female, carry it in a box covered with gauze to any place where the males are likely to be found, and if there are any about they are sure to congregate round the box. It is not known by what sense the males are thus directed to the females, but probably it is by sound or smell, as is the case with all insects of this order. The Lackey is only injurious to vegetation when in the caterpillar state, but in this state it at times does an immense amount of mischief. It is a very promiscuous feeder, the leaves of few trees coming amiss to them; they will even eat the leaves of Fir trees, Oaks, Elms, Beeches, Poplars, and fruit trees, are, perhaps, their favourite food, as the caterpillars form a kind of net or web in which they may be found during the day. The easiest way of destroying them is by crushing the nests against the boughs with a stick or pulling them out of the trees and destroying them. The rings of the eggs may easily be found if carefully searched for, and should not be merely detached from the trees and thrown away, but should be destroyed by crushing them against some hard substance. The cocoons should always be destroyed when met with. Several kinds of ichneumonids are parasitic on the caterpillars, and are a great assistance in keeping this insect in check. The moths make their appearance early in July, and, after pairing, the females at once commence

in size they change their skins several times; when they have attained their full size, which they generally have by the middle of June, they no longer continue to live together, but disperse, and each searches for a suitable position in which to undergo the change to the chrysalis state. They generally select two leaves which happen to be close together, or some sheltered spot on a wall, paling, or tree-stem, and there spin their cocoons, within which they become chrysalides; in this state they remain until July, when the perfect insects emerge from the cocoons. The moths though common are comparatively seldom seen, as they only fly at night, remaining during the day hidden among leaves, in hedges, Grass, &c. The males are generally somewhat smaller than the females; they measure from 1 in. to 1½ in. across their fully expanded wings. The antennae of the males are much more deeply toothed than those of the females, and their bodies are more slender. The colour and markings are similar in both sexes. The general colour of this insect is a pale yellow, or tawny, or reddish yellow. On each of the four wings are two whitish transverse, somewhat curved lines, which are not quite parallel, being rather further apart at the upper margin of the wing than they are at the lower margin, the spaces between which are of a darker shade than the remainder of the wing; the fringes of the wings are white interrupted by spaces of the general colour of the wings.

The caterpillars, when fully grown, are about $1\frac{1}{2}$ in. in length; they consist of twelve joints, exclusive of the head, the first three, the sixth, seventh, eighth, ninth, and last joints, each bear a pair of legs. The head is a bluish-grey with two black spots; the body is slightly covered with hairs, down the middle of the back is a white line, on each side of which are two reddish, fawn-coloured stripes, separated from one another by a black stripe; below the second fawn-coloured stripe, on either side, is a wider, bluish band, and, below that, another fawn-coloured stripe. The chrysalis is dark brown, enclosed in a thin silken, oval cocoon, sprinkled with a fine white or yellowish powder.

S. G. S.

NOTES FROM KEW.

Stove Plants.—Even at this dull season of the year each successive visit to the stoves at Kew continues to afford fresh subjects of interest, amongst which some may fairly lay claim to novelty, whilst in others we often recognise some old favourite, such as *Columnnea Schiedeanae*, long ago introduced to gardens, and found growing as an Epiphyte on trees near Misantla and other districts in Mexico. It forms a very ornamental object when planted so that it may attach itself to the trunk of a Tree Fern or any similar support; in such a position it attains from 6 ft. to 10 ft. in height. The leaves are lance-shaped with prominent reddish veins on the under surface; it produces a profusion of blossoms, which are similar in size and form to those of the well-known *Rhodochiton volabile*, the calyx being of a deep flesh colour, the long two-lipped corolla deep orange copiously spotted with red. Than the *Mysore Hexacentris* (*H. mysorensis*) few climbers are more attractive at this season, and it is particularly adapted for training to a rafter or on an umbrella-shaped trellis, as the long pendulous racemes of deep yellow blossoms are then seen to the best advantage. It is an evergreen of rapid growth and very free flowering. The variety here is named *lutea*, and as in the type the margins of the petals are of a deep red colour. The lemon-scented *Gardenia* (*G. citriflora*) is a remarkably neat and desirable shrub, growing about 2 ft. high, with small, dark green leaves, and literally covered with clusters of pure white blossoms of the size of a shilling; they emit a delicious odour, reminding one of that of Orange blossoms. A plant of such real merit is surely entitled to a place in every collection. The South African form of *Crinum ornatum* is flowering freely in the Palm-house, and makes a noble specimen. It has bold ample foliage and stout flower stems that rise 3 ft. high, and are terminated by umbels of lovely large blossoms 3 in. across, and of a delicate bluish tint. One of the finest Bromeliads is the drooping *Billbergia* (*B. nutans*), a native of Tropical America, and both novel and striking. Its leaves are from 1 ft. to $1\frac{1}{2}$ ft. long, narrow and channelled. The flower stems are about 15 in. long, gracefully arching in the upper part, and bearing several rosy-pink bracts from 2 in. to 3 in. long, and pointed. The flowers are $1\frac{1}{2}$ in. long, narrow, of a pea-green colour, edged with deep purple. *Rhipsalis rhombica*, a native of Brazil, is a curious member of the Cactus family, with flattened branches coarsely notched at the edges, from the sinus of each of which springs a pellucid, star-like blossom of a pale yellow colour. These being produced in such large numbers in continuous succession render it well worthy of culture in the dry part of a stove. *T. crispata*, from the same country, is very similar to it, but by no means so free flowering. A few very handsome kinds of *Aloe* are now enfleurishing the Cactus house, the most conspicuous being *A. supralavica*, which is several feet in height, with massive glaucous leaves spreading horizontally, and dense spikes, 15 in. long, of deep orange-coloured blossoms. *A. platylepis* is of similar dimensions, but with ascending leaves and flowers of a lighter hue. The variety *lutea* bears handsome yellow flowers. *A. depranophylla* is very distinct, on account of its decumbent foliage and short, thick raceme of deep red blossoms. All these are natives of the Cape region.

Orchids.—Perhaps the handsomest of all the Dendrobies is *Dendrobium Wardianum*, here represented by finely-flowered examples. It is a very variable kind, for, even in a small number, a few well-marked forms may be detected differing from each other in the size of the flowers and clearness in the colour of the markings. Some, what resembling it in colour is the fleshy-jointed *Dendrobium* (*D. crassinode*), a very remarkable kind, on account of the knotted appearance of the stems, which sometimes attain 2 ft. in length. Like the last, it is an abundant bloomer, though the flowers are of smaller size. *D. heterocarpum*, though not so showy as either of the foregoing, is, however, equally desirable, on account of the delightful perfume exhaled by the blossoms, which are large, and of a pale primrose colour, with the lip covered with purple, velvety, dense hairs. The flowers of *D. aureum*, as here named, appear to differ from it merely

in being a shade darker in colour. These, on account of their naturally pendulous habit, are admirably suited for basket culture. The quadrangular-stemmed *Dendrobium* (*D. tetragonum*) is a very singular kind from Moreton Bay. Its stems are four-angled, and are about 1 ft. long, drooping in habit, and terminated by a pair of oval leaves, from which springs a cluster of spider-like blossoms, with narrow attenuated segments of a brown and white colour, and a small, recurved lip, white and barred with chocolate. Another cool house *Dendrobium* is *D. japonicum*, which has slender stems and flowers about 1 in. across, of a delicate bluish tint, with a blotch of purple at the base of the small, pointed lip. *Masdevallia melanopus* is a neat little species, much in the way of *M. polysticta*. It flowers in the same profusion, and, though the blossoms are smaller and of a duller hue, they are very fragrant. It, moreover, continues many weeks in perfect condition. The old *Ansellia africana*, which inhabits the western coast of Africa, and is usually found growing on the Oil Palm (*Elaeis guineensis*), is extremely handsome with its bold foliage and immense terminal panicles of blossoms, yellowish-green in colour, beautifully banded with rich brown. A small specimen of an unnamed variety of it is decidedly superior to the type, having larger flowers and the markings much brighter.

W.

NOTES OF THE WEEK.

Dendrobium lasioglossum.—This is an Orchid rarely seen but, nevertheless, it is one of the prettiest of its class. It is slender in habit, and its blossoms, which are as white as ivory, and about the same size as those of the Primrose-coloured *Dendrobium luteolum*, are produced on slender, graceful stems two or three together. We lately saw both these kinds just allied to in good condition in Mr. Smith's garden at Wimbledon.

Ficus radicans.—This makes an excellent plant for baskets, or, when grown in pots, it is very useful and effective for draping the path walls of plant-houses. It grows rapidly, and will withstand a great amount of rough usage, and is therefore well adapted for room decoration. It is a plant not very commonly met with, but it is largely grown by a few nurserymen near London, who carry out indoor decoration on an extensive scale.

Cordylina indivisa.—This old-fashioned fine foliage plant may often be seen in the shops of small plants, but it is seldom met with in a state of development such as that in which we saw it the other day in Mr. Williams' nursery at Holloway. The plant to which we allude is from 4 ft. to 5 ft. high, and is furnished with broad, glossy, gracefully arching leaves. It is in the most robust health, and as a pot specimen is, perhaps, unequalled in the country. Large quantities of seedlings may also be found in the same nursery.

Begonia hydrocotylifolia.—This old-fashioned plant, which still ranks amongst the best of its class for winter flowering, we lately saw thriving and flowering freely on a rock-covered wall in Sir Henry Peek's garden at Wimbledon; plants of it placed in large pockets between the stones had thrown out large masses of stiff, glossy leaves, and, at the time of our visit were profusely furnished with blossoms. Associated, as is the case here, with *Ferns*, *Lycopods*, *Ficuses*, and similar rock plants, these *Begonias* have a very pleasing effect, and afford a good supply of blossoms for using in a cut state.

Prunus sinensis fl.-pl.—Amongst forced decorative plants one of the prettiest at present is this double white *Prunus*, and it is a plant that requires but little heat to bring it into flower. Every shoot of last season's growth is now laden with most beautiful pearly white, double flowers, and they remain in good condition for a considerable time in a cool conservatory temperature. I find this, *Deutzia gracilis* and *Spiraea japonica* to be most useful for mixing with brightly-coloured *Azaleas* and Dutch bulbs now coming freely into bloom.—J. GROOM, *Linton*.

Flowers, Fruits, and Vegetables in Covent Garden.—Notwithstanding the severity of the weather, this market appears to be well supplied with all kinds of flowers, fruits and vegetables in season. Bouquet flowers consist of *Camellias*, paper-white *Narcissus*, white *Lilacs*, *Rosebuds*, pink and white *Pelargoniums*, *Lily of the Valley*, and *Hyacinth* pipes. The waxy white blossoms of *Lælia alba*, *L. anceps*, and *Cologyne cristata* are also now being used largely in a cut state. Fruits, which are plentiful, consist of *Gros Colman*, *Lady Downes*, and *Muscat Grapes*, all somewhat lower in price than usual; *Pine-apples*, of fair size and quality, fetch from 8s. to 12s. each; *American Lady Apples* may be obtained at 2s. per box of about three dozen fruit; *Good Newtown Pippins* are scarce, but fairly good in quality, and selected *Nonpareils* may be bought at from 1s. 6d. to

THE FRUIT GARDEN.

PRUNING AND STARTING LATE VINES.

The experience of the past year will probably arouse many Vine growers to the importance of starting Vines for producing a supply of late Grapes somewhat earlier than we have been accustomed to do, and of pruning and dressing them—where dressing is still considered necessary—in time to admit of their being started from the beginning to the middle of February. In the cultivation of late Grapes there are many points which should receive primary forethought, not the least of which is, how the best return can be produced at the least cost in fuel, which is a very heavy item in the garden expenditure of the present day. Before taking this part of the subject into consideration there are other details upon which I would like to say a word. After the Grapes are cut and carefully stored away in dry fruit rooms, the Vines should be pruned without delay; and in pruning I think a wise discretion might be exercised in many cases, not in cutting upon any particular principle or upon any mathematical calculation, but upon a system the result of experience acquired by studying the conduct of the different varieties of Grapes grown under different conditions and circumstances. There is no doubt that soil, climate, and other circumstances have a very potent effect, either one way or the other, in the production of Grapes; so also has the amount of light to which the wood of the Vine is exposed. If this important factor in Grape culture be minimised by encouraging more spurs, and consequently more leaf growth, than can be fully exposed to the direct action of sun and light, the results will—must, in fact—be less satisfactory than they otherwise would be. In pruning our late Vines this year, I have been struck with the varying conditions of growth, its character and solidity, in several varieties of Vines of more or less robust habit, where influence of sun and light had most play amongst the wood and foliage and where the spurs had not been too thickly set on the Vines. I also noticed, in strong-growing varieties like Trebbiano, where a latent eye pushed away a weakly growth which was encouraged, how solid and thoroughly ripened it was to the core, as compared with strong shoots on the same Vine from spurs on either side of it. Practically, then, pruning is an operation to be learned by experience of non-superficial character; for not only do Vines vary in habit in different soils, but the houses in which they grow also alter their condition a good deal. Vines which are grown in low, badly-ventilated houses should not be planted nearer to each other than 3 ft., and the spurs, where they are grown on the spur system, should be 18 in. apart; they should also be started into growth a month earlier than Vines which are more favourably situated in light, airy, lofty houses. Of course exceptions would occur in the case of Vines such as Lady Downes, which scalds so badly in hot weather. This variety may be grown at 2½ ft. apart, and the spurs might be allowed to grow closer, in order that the foliage might shield the berries from sudden blinks of strong sunshine. Another matter worthy of consideration in the case of vigorous-growing Vines is that they should not be too much "out-bud" by stopping where there is anything like a fair opportunity of giving them headway, nor should they have over-stimulating food supplied to them while they show a disposition to grossness. Plenty of clear water at the roots will be sufficient for them, and with a long season of growth they will settle into a free-bearing state, which cannot be expected from the practice of late starting and a system of cultivation which induces soft pithy shoots. Vines are often retarded in spring, on the plea of economy; but I fear the fact is lost sight of that it takes more fuel to finish off crops in a dull, unless autumn than it would to give them an early start in the spring, to say nothing of the superiority of solar heat over the artificial warmth that can be obtained from hot-water pipes.

W. II.

SOIL FOR PINE APPLES.

THE instances Mr. Simpson mentions (p. 102) in which Pines are grown in a mixture of loam and peat, and in peat alone tell their own tale. Does Mr. Simpson mean to say that good pure loam suitable in texture is not the right soil for Pines? If not, what is the use of his trying to upset a fact by instancing a couple of exceptions? As to the shape of house for Pines, my reason for giving preference to a hip-roofed structure, as a matter of course facing south, is that it gives an opportunity of raising the back of the pit in which the plants are placed, so as to bring them all more equally near the glass than in a span-roofed house, under which conditions it is a question if they do not get as much light as in a span-roofed building, unless the latter is very narrow, and in a hip-roofed house, with a path at the back, and the centre pit as usual not coming beyond the ridge,

2s. per dozen; Tangerine Oranges and Pomeloes are very plentiful, and Pears of the Belle Angevine and Catilao types are very good and of immense size; a few examples of Easter Beurré of good quality may also be had. Asparagus is at present anything but good, but Seakale is excellent and moderate in price; Mushrooms (buttons) sell for 2s. per box, containing about 2 lb.; Cucumbers are fairly plentiful, but appear to have suffered from an insufficiency of heat; new Kidney Potatoes of good quality may be obtained at 1s. per lb., and inferior ones at 6d.; a few Tomatoes are offered for sale, but they are small and badly coloured; forced Rhubarb is abundant, and there is a good supply of firm white Broccoli.

The Green Park.—The plan of spoiling this Park by running short-cut walks through nearly all its remaining green spaces is being persistently carried out. Much "progress" has been made in this direction this winter in spite of the bad weather.

Primula Blushing Beauty.—This is one of the best of the double Chinese Primulas now in flower in the London nurseries. The plant is a free grower, and an abundant bloomer, its flowers being of the palest white, changing to blush, very double, and with fimbriated edges, and larger in size than those of any other double Primula. It was raised and sent out a few years ago by Messrs. Henderson, of the Wellington Nursery.

Pryal's Golden Cypress.—The editor of the "Californian Horticulturist" states that during a visit to the nurseries of A. D. Pryal, on the Temescal Creek, some four miles from Oakland, California, he saw the original tree of Pryal's Golden Cypress, which he describes as "a seedling of marked character from the well-known C. pyramidalis. The deep yellow blotches ran into the branches, and even show on the cones. The compact growth and evenly-distributed variegation make this a promising novelty."

Cologynes and Amaryllises.—These, associated, form an effective feature just now in the Pine-apple Nurseries. The former are grown in quantity in small pots, and are subjected to cool treatment, a system under which the plants assume a deep green, healthy appearance, and the pseudo-bulbs, which are large and plump, extend themselves in such a manner as to almost completely hide the pots. The Amaryllises consist of many showy named and seedling kinds, among the best of which is the crimson and white A. Hendersoni. The singular Epidendrum tridactylon is also flowering freely in one of the quaint-looking shells of the Brazil Nat. Its flowers, which are white, possess a perfume very similar to that of a Primrose.

Primulas at Forest Hill.—There is at present a fine display of Chinese Primulas in Messrs. Carter & Co.'s nursery at Forest Hill. It consists of some hundreds of well-grown plants, many of which we saw in flower in November last, and which still retain their beauty. The flowers throughout are faultless in form. Their colours consist of pure white, crimson, mauve, violet, and brick red, and many of them are producing two rows of finely fimbriated flowers. We also noticed one kind with blue flowers of large size and good form, thus showing that ere long permanent blue-flowered forms of Chinese Primulas may be expected to occur as frequently as crimson or rose.

Camellias and Orchids.—These are well cultivated in the same house in the garden of Sir H. Peck at Wimbledon. The Camellias occupy a back border of a narrow lean-to house, and are tied and pruned in, so as to form a sloping bank of glossy leaves and blossoms from the floor to the roof. The Orchids, which consist of *Codontoglossum*, *Oncidiums*, *Cypripediums*, *Lycastes*, &c., are grown in pots arranged on a narrow, gravel-covered stage along the front of the house next the glass, whilst from the roof are suspended noble plants of the snowy white-flowered *Cologyne cristata* growing in large, raft-like oak-wood baskets. Of *Odontoglossum Alexandræ* and *O. Pescatori* and *Lycaste Skinneri* there is a good display, and in another house is a collection of *Dendrobiums*, which will shortly be in flower.

Lachenalia pendula.—This is grown to perfection in baskets in the gardens at Wimbledon House, where numbers of it are just coming into bloom. The baskets, which are made of wire, are round, lined with Moss, and filled with good soil. The bulbs are planted at equal distances apart in the Moss all over the baskets, and when in flower they form large balls of brilliant blossoms and deep green leaves. The bulbs are taken out yearly; the baskets are refilled with fresh soil and planted again. Abundance of water is necessary after the plants commence to grow, and this can best be supplied by immersing the basket wholly in a tank. Grown in the manner just described *Lachenalias* thrive amazingly, and are seen to better advantage than when grown in any other way, whilst for hanging either in windows, porches, or conservatories, they are both useful and attractive.

"This is an art
Which does mend Nature: change it rather; but
This ART ITSELF IS NATURE."—Shakespeare.

NOTES ON CROCUSES.

As some little time will elapse before the publication, in a complete form, of the monograph of the genus *Crocus* which I have in preparation, I wish to record one or two points that have occurred to me in which the nomenclature of several known species will have to be modified and some additions made to the species of the genus.

In examining the *Croci* in the herbarium at the Botanic Gardens, Edinburgh, I found a set of specimens collected by Dr. G. Kirk (now consul at Zanzibar), at Renkier, Dardanelles, in March, 1856, which I have little doubt is an undescribed species. Several names have been successively attached in pencil to the specimens—Boryi, albiflorus, biflorus, and susianus—and afterwards erased, but with none of these will it agree, and the associated characters would separate it from every other known species. I propose to call it

Crocus Kirkii, coming under the division *Schizostigma* of Baker. *Limb* 12 lines to 14 lines in length by $3\frac{1}{2}$ lines to 4 lines wide, white or pale cream colour, yellow towards the throat, the outer divisions occasionally striped and feathered externally with purple, like *C. biflorus*, or faintly suffused with purplish markings.

Throat apparently uncoloured, yellow.

Tube from germin to throat 2 in. to $2\frac{1}{2}$ in. long.

Stigma 7 lines high, orange, dividing towards base of anthers and immediately branched into about a dozen capillary terminations, reaching a little above the level of the anthers and resembling the stigma of *C. hymalis*.

Anthers 4 lines to 6 lines in length, on a filament 2 to 3 lines high, reaching nearly to the level of stigma.

Leaves appearing with flowers in March, and subsequently produced 20 in. or 22 in. in length in April; blade very broad and flat, 3 lines wide, with a slightly reflexed margin; central white band, narrow, and well defined; keel glabrous, very narrow, lateral channel wide and open, glaucous, traversed by five or six narrow ribs and furrows.

Corm 8 lines to 9 lines wide by 7 lines to 8 lines high.

Corm tunic of parallel fibres, resembling that of *C. aureus*; main tunic splitting up from base into strong, flat, parallel, unbranched fibres, united in parcels of three or four at apex; basal tunic of short, strong fibres, radiating from a broad, basal plate; cap membranous, produced as a bunch of flat, pointed fibres, $\frac{1}{2}$ in. to $\frac{1}{4}$ in. above summit of corm.

Basal spathe absent.

Proper spathe of two equal membranous valves, 2 in. to 3 in. in height, exceeding sheath-leaves and reaching nearly to throat.

Germin $1\frac{1}{2}$ in. to 2 in. above summit of corm, the supporting scape lengthening to 3 in. or 4 in. in April.

Sheath-leaves three, from 1 in. to 4 in. in length, the longest with a broad, expanded termination, falling short of proper spathes, and enclosing from two to three scapes.

Flowers produced in March and early in April.

Renkier, Dardanelles; gathered by Dr. G. Kirk, March and April, 1856.

Crocus aleppicus (Baker) and *C. Gaillardotii* (Boissier).—I am indebted to Professor Haussknecht, and also to M. Boissier, for specimens of a diminutive *Crocus* gathered by the former on Djebel Nabor, one hour north-west of Aleppo, in January, 1867, and on comparing it with *C. Gaillardotii*, of Boissier, from several localities in the south of Syria, I have no hesitation in concluding that they are one and the same species. The name *aleppicus* must, therefore, yield to the older name *Gaillardotii*. This species appears to be common in the south of Syria, and probably extends northward over the intervening country to Aleppo. It must not be associated with *C. hymalis*, of Palestine, from which it is distinguishable by its compact fibred corm tunic; that of *hymalis* being membranous without distinct fibres. *C. Gaillardotii* is a much smaller plant than *C. hymalis*.

C. vitellinus and *C. syriacus*.—Although somewhat different in aspect, the latter being a smaller plant, they must, I think, be looked

upon respectively as the orange or bronzed forms of one species. I have been favoured by Professor Haussknecht with specimens of the little striped *Crocus* from Aleppo (*C. syriacus*, of Herbert and Baker) and have also in cultivation the Beyrout plant, between which I can detect no difference of any specific value; indeed the Beyrout and Saida form, which is rather larger than that from Aleppo, occasionally occurs with bronzed flowers, and various collectors who have liberally supplied herbaria with specimens from Northern Palestine have labelled them indiscriminately *syriacus* and *vitellinus*. This is a midwinter flowering species and must not, I think, be associated with the bronzed *Crocus* from near Smyrna.

C. Balanensis, discovered by Balansa on the hippurite limestone plateau above Smyrna, where I have also gathered it. Though growing at a low level, from 500 ft. to 600 ft. in altitude, it is a late vernal species, and flowers at least three months later than *C. vitellinus*, from which it differs by its very broad leaves and by other characters.

C. Orsinii (Parlatore).—I had a long, unsuccessful hunt for this species in October, 1877, having, as I afterwards ascertained, gone too high up on Monte di Fiori, near Ascoli, Italy. I have recently been favoured by Professor Cesati with specimens gathered by Tenore in 1830, and have also seen Orsinii's specimens of a year later from the same locality, gathered on the south-east flank of the mountain, at altitudes of from 2000 ft. to 3200 ft. I find we have here a form almost precisely identical with the garden Saffron, quite undistinguishable from it, except that the stigma is a little shorter; indeed, Tenore labelled his Monte di Fiori specimens "*C. sativus*, sauvage," and, but for Parlatore's subsequent name of Orsinii having been applied to this plant, the vexed question of the wild origin of the garden Saffron need not have remained open.

C. Pallasii, from Dalmatia, and *C. Thomasi*, from South Italy, must, I think, be united as one species. A careful comparison of the specimens at Kew, and in the Florence Herbarium, permit of no other conclusion, which has been hinted at long ago by several writers, including Visiani, Nyman, and Baker. I have in cultivation this plant from the neighbourhood of Patras in the Morea. *C. visianicus*, of Herbert, *C. campestris*, of Pallas, and *C. hybernus*, of Fridwaldeky, are probably also identical with *C. Pallasii*.

C. karduchorum (Kotschy).—"In jugis inter Müküs et Scherwan Karduchia, 6000 ft. 27th Sept., 1859." In specimens thus labelled in the Kew Herbarium the long corm (as distinguished from the exceptionally flat corm of *C. zonatus*, Gay) and dense membranous corm tunic are characters that would, *prima facie*, separate it from Gay's *Crocus zonatus*, the only species near to it; but the flowers of the Kew specimens are insufficient to draw up a description from. As the plant probably exists in other herbaria, I should be much obliged by the loan of any specimens exhibiting the stigma and stamens.

C. cilicicus (Kotschy) appears to be abundant in the Cilician Taurus, and has been, from time to time gathered by various collectors, and described under several names, which it will be convenient to suppress. *C. cancellatus* var. *Kotschyanus* of Herbert, *C. pylarum cilicicum* of J. Gay, and "new species allied to cancellatus," gathered by Balansa in the Cilician Taurus, appear to be identical with *C. cilicicus*, and all of these Baker places under the species *cancellatus*. I cannot take exception to this view, but as the bright blue oblongo-lanceolate limb, which is narrower than in the ordinary forms of cancellatus, seems to be a constant character of the Cilician plant, I think it may be properly and conveniently made a sub-species of cancellatus.

The name *Kotschyanus* having been applied for some years to two very dissimilar species, viz., to the cancellate *Crocus* of the Taurus and to Gay's *C. zonatus*, it will be best to discard it altogether, and retain the name of *cilicicus* for the one and *zonatus* for the other.

One other error respecting two Spanish species I wish to suggest a correction for; viz., the confounding of *C. nudiflorus* with *C. serotinus* in the records of numerous Spanish habitats. As far as my own observations go, *C. nudiflorus* does not extend south of the chain of the Pyrenees and Asturias, and in none of the specimens from the alleged habitats of *C. nudiflorus* in Central Spain, can I recognise anything but *C. serotinus*. I have received from Gijón, in North Spain, bulbs of Herbert's *C. asturicus*, but this cannot be admitted as an ally of *C. nudiflorus*, and appears to be merely a form of *serotinus*, which is a later flowering species of smaller stature, the leaves of which are autumnal, just appearing with, and immediately after the flowers. The stoliferous reproduction of the corm, which is so marked a feature in *C. nudiflorus*, is absent in all the specimens I have examined from the alleged Spanish habitats of *C. nudiflorus*. I do not say that *C. nudiflorus* may not occur here and there south of the Pyrenean chain, but the recorded habitats and the specimens

thus named by many authors and collectors, are unquestionably forms of *C. serotinus* of Salisbury.

C. etruscus (Parlatore).—I had the good fortune, in company with my friend, Mr. S. Sommer, of Florence, to refine this plant in the Tuscan Maremma in the spring of 1876, and we had no hesitation in agreeing that it was a thoroughly distinct and well-marked species. Its affinities, however, are not, as had been supposed, with *C. reticulatus*, but with the group of Italian and Corsican species, including *versicolor*, *Imperati*, *suaveolens*, *corsicus*, and *minimus*. The strongly reticulated corm coat resembling that of *C. reticulatus*, is merely an instance of the singular absence of natural grouping of the character of individual organs, which is such an obvious feature of the genus.

C. minimus (D. C.) = *C. insularis* of Gay; and *C. corsicus*.—As I have already published descriptions of the two very distinct species of *Crocus* occurring in Corsica and Sardinia, which have hitherto been lumped under the name of *minimus*, I will here merely point out that the smaller of the two, *C. minimus*, which is confined to low elevations near the coast line, is distinguished by its small, dark purple flower, yellow or pale orange stigma much exceeding the anthers, and by its corm tunio, consisting of parallel fibres; and the larger, *C. Corsicus* (which is confined to the mountains, and I believe does not occur below a level of 2000 ft.) by its pale purple or lilac flowers, with a distinct buff or cream-coloured coat on the outside of the three outer limbs, its much larger stature, its short orange-scarlet stigma, and its finely reticulated corm coat.

C. peloponnesiacus (Orphanides).—A good deal of obscurity and doubt hangs over this species, and, if really distinct, its affinity lies with *C. hadraticus*. The only point of difference, according to the published description, is that *C. peloponnesiacus* flowers before the leaves appear, and that in *hadraticus* the leaves and flowers are contemporaneous. Cultivators of *Crocuses* know that in many cases this is only a question of degree, and it may be that the original description of the supposed new *Crocus* was drawn up from a specimen of *C. hadraticus* in which the leaves were late in being produced. In a specimen of supposed *C. peloponnesiacus* recently sent me from the neighbourhood of Patras by Professor de Heldreich, of Athens, I can detect no character that would separate it from *C. hadraticus*. *C. hadraticus* is very variable; in many cases the flowers are pure white; in the Albanian plant white with a purple blotch at the base of the limb; and in the Santa Maura form (*C. chrysobolonicus*) the throat, which is of a bright golden-yellow, is externally veined with chocolate.

I would here notice that a plant has been extensively distributed as *C. peloponnesiacus*, which is merely one of the numerous varieties of *C. cancellatus*, and once distinguishable by its corm tunio of strong oblong-reticulate fibres, that of the true *C. hadraticus* consisting of fine silky reticulations like the well-known corm tunio of *C. sativus*, to which *C. hadraticus* is allied.

C. Boryi (Gay) = *C. lavigatus* (Bory et Chaub.), *C. Tourneforti* - *C. marathonisius* (Heldreich), and *C. orphanidesi* (Hooker). In this group, the distinction between *C. Boryi* and *C. Tourneforti* was well understood by the late Dean Herbert, but as these two species often grow in their native habitats closely intermingled, the bulbs have in later years been confounded in a confused way in English collections.

This section includes two well-marked species, *C. Boryi* or *lavigatus*, distinguished by its hard, cartilaginous corm tunio, like a thin Hazel-nut shell, splitting up at the base into a series of vandyke terminations, the successive tunies underlying each other and lasting for many years as a series of super-imposed imbrications over the Pear-shaped corm; also by its comparatively short, erect, much-branched stigma, generally yellow, rarely orange, and by the symmetrical feathered markings of the limb resembling those of *Crocus biflorus*.

C. Tourneforti, by its softer fibro-membranous tunio, its long, fragile-branched, orange stigma, the lax divisions of which bend over, and by its self-coloured limb rarely marked, except with a few unbranched lines.

C. marathonisius, of Heldreich, and *C. Orphanidesi*, of Hooker, are closely allied to *Tourneforti* and not to *Boryi*. *Marathonisius* is, I believe, invariably white; *Tourneforti* and *Boryi* also vary with white flowers, and the three white forms placed side by side are not a little perplexing. White *Boryi* and white *Tourneforti* are, however, distinguishable by their corm tunies and stigmas, and white *marathonisius* by its extremely short and fragile stigma generally reduced to three fine thread-like terminations. Professor de Heldreich assures me that this is a constant character, and it is invariable in the specimens at Kew and those both fresh and dried received from Athens; but the aspect of this stigma allies *C. marathonisius* with *C. Tourneforti* and not with *Boryi*.

The white autumnal *Crocus*, common in Corfu, is probably the white form of *C. Tourneforti*; the leaves of *C. Tourneforti* and *marathonisius* are usually both longer and narrower than those of *C. Boryi*.

Whilst writing, I am told of a gay lilac and yellow *Crocus* having been observed near the melting snow high up on Lebanon on the 15th of May. As no late vernal species is known in Syria, what can it be? and will some tourist who visits Lebanon set this question at rest by transmitting some roots to English gardens? It was seen going from Baalbeck to the Cedars over the high pass of Muckmel, on the eastern side of the range near the path leading from Ainata on the east, to the Cedars on the west, close to the snow, and flowering amongst the melting snow.

I have also received from Mr. Barr fresh specimens of an unfamiliar *Crocus*, flowered from roots dug up by Mr. Llewellyn on sandy ground near the lighthouse at Biarritz. It has a lilac, self-coloured limb, bright orange unbearded throat, very long orange stigma branched from near summit of anthers, short, pale, lemon-coloured anthers, very broad leaves with a square keel and a double proper spathe; the corm I have not seen. I believe no *Crocus* is known from that district except *nudiflorus*, which is an early autumnal species, and *vernus*, which occurs in the Pyrenees; with neither of these will it at all agree.

Benthall Hall, Broseley.

GEORGE MAW, F.L.S.

NOTES AND QUESTIONS ON THE FLOWER GARDEN:

Hardiness of Tuberos-rooted Begonias.—Having a quantity of these in open borders wholly without protection, on examination to-day (Feb. 8) I was gratified to find from present appearances that they have not received the least injury. Ours is a light soil with a dry, gravelly sub-soil, which may account for the safety of the tubers. It could hardly have been hoped that in clayey heavy soils they would have survived the late severe weather.—W. H.

Finderne's Flowers.—In THE GARDEN for January 25 (p. 75) the story is told of Sir Bernard Burke and his visit to the village of Finderne, in Derbyshire, in search of records of the ancient family of Finderne. The last of the Findernes married an ancestor of mine, and I am directly descended from her. I claim, therefore, to be interested both in Finderne, the Findernes, and Finderne's flowers. A few years ago I took some pains to find out to what species these flowers belonged. My friend, the Rev. B. Spilsbury, the present incumbent of Finderne, dug up some of Finderne's flowers from the site of the old Hall, and planted them in his garden, and they produced *Narcissus* poeticus. Whether or not *N. poeticus* grows in any part of Palestine I cannot say, and whether or not this is the plant which my maternal ancestor, Sir Geoffrey Finderne, brought home from the wars I do not presume to decide, but there is no question that the plant now known in the village of Finderne as Finderne's flowers is *Narcissus poeticus*.—H. HARPER CREWE, Drayton-Beau-champ Rectory, Tring.

Plants Injured by the Late Frost.—Now that the thaw is complete I have made a careful survey of the injurious effects which frost has had on plants here (North Hants), and the following is the result:—Common Laurels are slightly browned at the tips of the shoots, the flower buds of *Laurostimus* are killed, but otherwise they are uninjured. In the case of *Arbutus Unedo* the points of the shoots are browned, and some of the finer hybrid varieties of *Rhododendrons* have had their flower buds frozen through. All other evergreen shrubs and Conifers show no signs of the severity of the winter through which they have passed. *Eucalyptus globulus* has been killed; some of the stronger plants may break from the ground line, but that, I think, is doubtful. *Phormium tenax* has suffered severely, and even those that were protected can hardly be expected to recover. *Arundinaria falcata* is killed to the ground, but the roots seem uninjured. Some of the older leaves of *Chamaecyparis Fortunei* are damaged, but otherwise the plants are not hurt. Of *Dracena australis* several plants which have weathered the last few winters are hopelessly injured. *Arundo conspicua* and the common Pampas Grass are also much browned. Stocks, Wallflowers, and Pentstemons are killed wholesale, and even some of the *Antirrhinum* have succumbed. *Echeverias* are all killed, and some of the hardiest Saxifrages have suffered severely; such as *S. napolensis* and *S. rosularis* will hardly recover. I suspect the repeated thawings, and so on followed by keen frosts, are the main cause of these being injured.—W. W.

— You will have long lists of killed and wounded by the late severe and continued frosts. I am happy to be able to record two rather unexpected escapes—a large pan of *Sarracenia purpurea* (the North American Pitcher-plant), standing on the Wilson raft in a

THE INDOOR GARDEN.

ACHIMENES AS BASKET PLANTS.

To amateurs and others whose means of plant accommodation is but limited, there is a great gain in growing plants that have tuberous roots; inasmuch as almost as soon as the majority of them go out of flower they require no further care, and may be wintered anywhere under stages or on back shelves, provided the soil containing them does not catch drip, or in any way become too wet and cold for their safety. Amongst others that admit of the above named treatment, none are more showy and useful or afford such a variety of colour and form of flowers, as the different kinds of *Achimenes*, the habit of which is such as to render them equally suitable for growing in pots or baskets, although it is, perhaps, in the latter way they show themselves off to the best advantage. In order to prepare them for this purpose, it is a good plan to start them first in pans of leaf-mould or finely-sifted peat, from either of which they lift readily and transplant with large balls, and may then be distributed regularly to furnish the baskets. The latter made with wires about $1\frac{1}{2}$ in. apart answer the purpose well, as between the heads of the plants may be thrust as the filling up proceeds. The quickest way, however, is first to line the basket with Moss, and then put in the soil, when, by making holes around the sides, the plants can be put into them at regular distances apart, and all made complete in a very short time. When this is done they should be hung in a house where they can get plenty of moisture and be syringed for a week or two to give them a start, after which, with a temperature varying between 60° and 70° , they make rapid progress and soon become covered with bloom. It should be borne in mind that *Achimenes* are shade-loving plants, and, therefore, the situation chosen for them should be where the sun does not strike them during the heat of the day, otherwise the leaves become blistered and the growth hard and stunted, which greatly detracts from their usually healthy appearance. The great fault with *Achimenes* in pots generally is that, owing to so many being grown together, they have a weedy look through being drawn up and having such small flowers, most of which are buried amongst the foliage instead of being set off by it. It is on this account that small pots of 6 in. or 8 in. in diameter always look better than pans containing large masses, and, besides this, they are altogether more handy and useful for decorative purposes; such sizes suit windows, greenhouses, and vases well where others would be quite out of character.

The number of tubers or plants which each pot should contain will depend on the sort, some being stronger than others and of a more branching habit; but for the generality of them it may be roughly stated that from five to ten are ample, as, when they have room, they send out many stems, to induce which it is always well to nip out the top of the first shoot formed when about 4 in. high. If it be desired to increase the stock of any new or scarce kind by leaving them to grow a little longer before they are pinched back, the tips removed in that operation may be used for cuttings, and if put in in moist heat, under a glass or in any close place, they will soon strike root and make fine flowering plants by the autumn; but in all cases where propagating is done in this way, it must be done early, or there will not be time for tubers to be formed. This is how many fail in keeping up a good stock; *Achimenes* have much of this work to do after they have done blooming, but instead of being assisted they are oftener set aside and allowed to take their chance, when the tops must of necessity die away prematurely. Instead of this, the right course to pursue is to place them in any frame or pit where they can have shade and be sprinkled overhead and shut up early till they show signs of ripening off naturally. If treated in this way, the soil when examined will be found to contain a rich harvest of fully-grown tubers that will keep plump and sound, instead of rotting away in the winter. The best way to preserve them is not to disturb them till they are wanted for starting, as they never do so well as when left embedded just where they grew, the conditions there being more suitable than those to which they are subjected when packed away in bags or buried in sand. To

tank on which were 3 in. in thickness of ice, is quite uninjured; a strong plant of *Abelia repens*, in an exposed position on the roof-work, has only the tops of the shoots out. How the spring flowers have burst into bloom! it is like the descriptions of the northern springs. Snowflakes, Winter Aconites, and hardy *Cyclamens* came up and were out in three days.—GEORGE F. WILSON, *Heatherbank, Weybridge Heath*.

Higheclere Pink.—This is one of the best rich crimson scarlet Pinks we have for borders. It keeps long in bloom, and it is equally good for forcing as for out-door decoration. Some plants of it struck last spring are just now coming into bloom, and promise to produce flowers in abundance.—J. C. F.

Stem-roots a Protection to Lily Bulbs.—I made an interesting discovery a day or two ago, which, I think, proves clearly, at least, one most useful property of the stem-roots of *Lilium auratum*. On examining some bulbs of one of the best varieties of that Lily that were not planted until the beginning of April last year, but which, nevertheless, grew strongly and flowered well, I found that these bulbs were perceptibly larger than when they were planted, and that the mass of stem-roots (dead, of course) was like a thick wig just over the bulb, protecting it most thoroughly from the soaking rains that had fallen a day or two previously; in fact the top of the bulb was as dry and comfortable as if it had been in a frame.—T. SMITH, *Newry*.

Carpeting Bulb Beds.—Allow me to add to the list of suitable plants for this purpose (p. 96) two more, viz., *Hypericum reptans* and *Erythraea diffusa*, both of which grow quite close to the soil, like a *Selaginella*, and make a perfectly green carpet, especially well suited for such bulbs as *Colchicums*, which do not produce any leaves. The former (*H. reptans*) is new to cultivation, its introduction being due to Mr. Elwes. Its flowers, which appear in large numbers late in autumn, are yellow and as large as a shilling. It is a native of Sikkim, and it has withstood this severe winter very well, although only planted out late last summer. The foliage, which is dense, has become brown just now, but the branchlets are fresh, and will, when they begin to grow, soon assume a better appearance. *Erythraea diffusa* has been regarded as a biennial, and rather tender, being a native of California; but it is a perennial, and I find it also to be very hardy; its foliage has remained all winter bright green, and it flowers abundantly in July, each branchlet producing one flower, of a beautiful dark rose colour, and as large as a sixpence. Seeds of both of these plants must be sown early, and the young seedlings should be pricked out 2 in. apart into pans, and planted out in autumn, or, better still, in the spring of the second year.—MAX LEICHTLIN, *Baden-Baden*.

Large-leaved Saxifrages.—If "W. D." (p. 112) wants a large-leaved Saxifrage he had better procure *S. crassifolia*, which has foliage about as large as that of a small-sized Cabbage Lettuce, and of the same shape, too. Many years ago I used this Saxifrage for spring and winter decoration of the flower beds, and found it an effective plant, the large, bright green leaves looking well in mid-winter, while its large spikes of flowers of a beautiful mauve colour were equally telling in spring; its only defect was that it was rather late in flowering. It is a very old plant, and may usually be met with where old plants are patronised. I have been told that there is a more recent one, of the same character and habit, that flowers some what earlier, but I am not acquainted with it. I have been told that *S. oppositifolia* is found wild on the Cumberland Hills, but I never had the good fortune to find it there, although one of the Moss-leaved species (*S. caespitosa*) was plentiful enough. I have always looked upon the best forms of our garden Moss Saxifrages as being mere varieties, not deserving a distinct specific name, but I have for some years grown one under the name of *S. Standishi*, which presents a dense, tufty mass of foliage of the brightest green all the year round, unless when in summer its faded flower stems give it a brown tinge in the sun. In its native habitat it delights in moisture, while, I believe, London Pride likes a dry situation, and I have seen it thrive pretty well under trees and shrubs where nothing else would grow. In such places it may be easily mistaken for a native plant, but I expect that when duly inquired into it will be found to merely be the outcast of some garden. A pretty flowering Saxifrage is often found on lawns and in meadow fields called *S. granulata*, the double form of which is one of the greatest ornaments of our gardens, but the single form is also pretty, while *S. oppositifolia* is certainly one of the very prettiest of our British plants, and when in a cultivated form it resembles some of the dwarf *Phloxes*. *S. crassifolia* is not British, but it is highly deserving of cultivation, and a good-sized tuft of it is at all times an interesting object, especially in the wild garden.—A RETIRED GARDENER.

grow *Achimenes* well, the pots should be thoroughly drained, as all through the summer they require abundant supplies of water, but it is essential for their welfare that it passes freely away, for anything approaching a stagnant state of the soil is sure to throw them out of health. Nothing answers better for *Achimenes* than a mixture consisting of about equal parts of loam and peat, used in a somewhat rough state, and to this should be added a good sprinkling of sharp sand so as to render the whole porous. After May they grow well in any ordinary frame, kept shaded and shut up early, but till then they must have artificial heat to get them along. Except greenfly, *Achimenes* are not subject to insects, and these pests can easily be got rid of by fumigation, which should be done cautiously, as it does not take much to injure the tender foliage. S. D.

EVERGREENS IN POTS FOR WINTER DECORATION.

VERDURE of any kind in winter is always welcome. At Christmas time we decorate our apartments, churches, &c., with branches of evergreens, which impart an air of cheerfulness and warmth. In countries in which the winters are severe all kinds of evergreens are held in high estimation, and are extensively grown in pots and tubs for winter decoration. In this country there are many situations in which evergreen shrubs in pots would be peculiarly acceptable. Into winter gardens, unheated corridors, balconies, &c., they might be often introduced with advantage, and many a bare spot would thus be rendered bright and pleasant to the eye. There is a good choice of subjects for this purpose, many of our finer forms of Conifers being, owing to their neat, compact growth, especially suited for pot culture. Some of them, indeed, appear to succeed rather better in this way than when in the open ground, that is provided they receive that amount of care which is needful to preserve them in health. Although evergreens are tenacious of life, and are sometimes tardy in showing the effects of neglect, yet they are none the less susceptible of injury, and it is noticeable that, unlike many forms of vegetation, if they once experience a serious check they never recover their pristine vigour; they lose that fresh appearance which distinguishes them under favourable conditions.

The best time for potting these plants is early in October when the growth has ceased and the roots yet fairly active. Choose compact, bushy, well-formed specimens and put them in pots which will just contain their roots, using soil of a somewhat heavy character and pressing it well in around the roots; if loosely potted the plants are liable to get displaced before they become well established, in which case they seldom remain long in good condition. When potted they may be placed in some sheltered position until they are removed to their winter quarters; when destined to remain during the winter months in exposed situations, such as on balconies or window ledges, they must never be allowed to stand dry, and in very hard frosts, or when accompanied by drying winds, they should be placed under shelter. Amongst subjects suitable for this purpose, *Thuja aurea* and *Retinospora ericoides* may be mentioned as worthy of special attention; they are neat as regards growth, and bear exposure very well; *Cupressus macrocarpa* and *Lawsoniana*, *Thuja plicata* and *Lobbi*, *Cryptomeria elegans*, *Aucubas*, both plain and variegated, golden and silver variegated *Hollies*, and *Buxus balearica*, are some of the most trustworthy plants for this purpose. The variegated varieties of *Euconymus* make charming pot plants and contrast effectively with the more sombre-hued kinds. The *Euconymuses* are much more satisfactory when they get the benefit of a little shelter during hard frosts; they do not appear to possess the same powers of resistance as the type, but become brown and disfigured and lose their terminal shoots in severe weather. This disfigurement has been especially noticeable this season; plants in open places have had their beauty quite spoiled, whilst those enjoying the shelter of a wall have escaped comparatively unharmed. The *Laurostimus* makes a pretty pot plant, and will, when placed in a winter garden or corridor, open its pleasing flowers considerably earlier than when in the open air. *Viburnum Awafuki*, *Pittosporum Tobira*, *Osmanthus ilicifolius*, and the broad and small-leaved *Myrtles* should all

be grown. By the middle of March they should be removed from their winter quarters into the open air, placing them where they may for a time get the benefit of a little shelter. Eventually they should be plunged in the open ground and kept well watered in hot weather. Beyond this little attention they will require no other care, and may thus be kept in good condition for years in comparatively small pots. Every year a few plants should be potted to take the place of those which may have outgrown the limits assigned to them, which latter will be found useful for planting out in the open air.

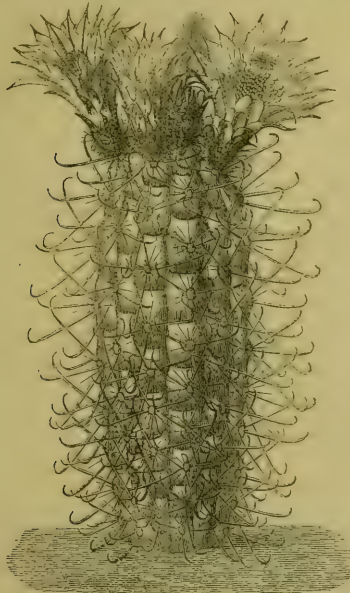
J. CORNHILL.

DECIDUOUS CALANTHES IN SMALL POTS.

WHAT has appeared in THE GARDEN about the fine growth made by these plants at Messrs. Veitch's is quite correct, as I can confirm from having seen them. Grown as at the Chelsea establishment one pseudo-bulb or so in a pot they do not need a large one, and by the use of shallow pans their weight is reduced, but any one conversant with the management of these plants can perceive, at a glance, that the small pans which they occupy is not the cause of their well-doing, but their being hung up close to the glass roof during the time when they make their growth, which enables them to get plenty of light. I have grown these *Calanthes* with even larger pseudo-bulbs than those at Messrs. Veitch's, several together in 10-in. or 11-in. pots; they also were hung up over the paths of the house. When potting, a small pot or pan is no doubt better than a large one, as these, in common with all other plants, are better not overpotted. The largest and altogether the best *Calanthes* of this section which I ever saw were grown some years since by Mr. Hubberstey, now at Bridge Hall, Bury, Lancashire. They were grown in proportionately good-sized pots, and hung up close to the roof. Mr. Hubberstey has recently grown *C. Veitchi* to such perfection that the pseudo-bulbs weighed sixteen ounces each. The advantage of cultivating these plants in a way that admits of their attaining a large size, is that the amount of flower and length of time during which the individual spikes will keep on blooming are commensurate with the strength and size of the bulbs. The very strongest will often push up a flower spike from each side of the base, and one or two from near the top as well. They will grow to a large size in almost any description of soil if not too adhesive, provided they are kept during the whole of the growing season where they will receive a maximum amount of light, with just sufficient shade to prevent the sun from injuring their leaves. In such a position they require to be freely supplied with water during active growth. Whilst flowering they need not be hung up, but may be placed where they can be best seen. They are amongst the easiest of all *Orchids* to grow, and equalled by very few in usefulness, either as decorative plants in bloom, or for furnishing cut flowers. Every individual blossom can be mounted in bouquet making, and the spikes (which should not be cut until the terminal blooms are nearly all expanded) will last in a room for a fortnight. Ever since I have been acquainted with these *Calanthes*, now some twenty-five years, I have urged every one to grow them who has a warm stove, in which they will succeed just as well as in an *Orchid* house, if there be enough heat and moisture at command. These they must have, in order to grow them well; but there is one peculiarity connected with them not generally known, and that is, that even when they have done flowering, and the whole of their leaves and roots are quite dead, as is their nature, the pseudo-bulbs must still be kept in a stove temperature, as it is during this time, that the growth buds for the ensuing year are being developed ready to start into activity. When well cared for they increase so rapidly that a stock is soon got up. I began with the red and yellow-eyed varieties of *C. vestita* when they were still dear. A couple of pseudo-bulbs, no larger than Walnuts, bought at Stevens's for a guinea and a half each, and carried home in my waistcoat pocket, soon made progeny enough to fill when in flower a good portion of a side stage in the stove, and from these I cut freely every day for three months. Their elegant drooping spikes are equal to anything I can think of for March stands, vases, and similar devices. T. BAINES.

ECHINOCACTUS UNGUISPINUS.

THIS is one of the rarest of the genus, and one that is most combative in its nature, having no respect even for the person of its owner. It is a plant that requires great care as regards watering, as it is very apt to rot; it is, therefore, best to keep it dry during the whole of the time from October to April. It flowers freely in June and July, producing good-sized yellowish-white blossoms. Such Echinocacti as this are best on their own roots, for if put on strong stocks they are apt to die off. In the case of the species under notice the central spine only is hooked, and all the spines when young are black. It is a plant which might be mistaken for a Mammillaria, but as all the Mammillarias flower from the axils of the mammae and the Echinocacti from the apex of the tubercule, just above the sets of spines, the distinction can soon be discovered. As will



Echin cactus unguispinus.

be seen by the annexed woodcut, the plant is erect in habit, and the epiderme is dark green. It is, in short, very distinct from all other Echinocacti.

J. CROUCHER.

Sudbury House, Hammersmith.

WINDOW PLANTS AND THE FROST.

THE winter in this neighbourhood has been remarkable rather for its length than for its absolute severity. But already many complaints have reached me of great losses among window plants, and those who have only small unheated or imperfectly heated structures in which to grow and keep their plants, have lost most of their Pelargoniums and other plants of a like tender character. Fuchsias no doubt are safe; they may probably die down to the base, but unless they are in very small pots, and very much exposed and the soil kept too damp, they will break again from the bottom close to the soil, but the old tops should not be cut back yet; wait awhile till the buds are pushing, and then cut down close to where new life is visible, which will probably be at that part of the plant technically called the collar, the point where the soil and the atmosphere meet. Tuberosus Begonias will be found exceedingly useful window plants for summer and autumn blooming; being of rather

a succulent nature, the dry air of a living-room will not have so injurious an effect upon them as it has upon many plants commonly grown in windows. At the approach of winter the tubers can be stowed away in pots, in any cool place where they do not become quite dust dry. I have seen them wintered safely, by laying the pots on their sides in the open air, covering them over with ashes, and thatching the heap with straw to throw off the wet; in fact, this is a better plan than keeping them in greenhouses, exposed to alternations of dampness and dryness, which in most peoples' hands are almost inseparable from wintering them in a house where fire-heat is applied.

Few people seem to realise the protection there is in common brown paper, or the ordinary paper on which newspapers are printed. In a fairly well constructed dwelling house, if the plants be taken from the windows in the evening, placed in a corner near the fireplace free from draught, with a newspaper thrown over them, they would generally be safe; but only the most patient and thoughtful are capable of following out any such plan to the end. I have known cases in which the greatest pains have been taken to protect the plants for a time, and then perhaps on some particularly sharp night they have been forgotten, the whole previous trouble thus counting for nothing. As soon as it can be clearly seen which plants are really dead and which are not, those that have perished should be thrown out, and the pots washed ready for their next occupants.

The time is now rapidly approaching when seeds may be sown, and offsets and cuttings rooted to take the place of those plants that are lost. Amongst seeds that may be sown now in some of the empty pots, are those of Sweet Peas, which will be available for either the inside or the outside of the window. Sow about twenty Peas in a 5-in. pot. They may stand anywhere till the green tops appear above the soil; then they must occupy a position in a light, sunny window, as without plenty of light they will grow too weakly to flower well. If the pots could be suspended in a light window, as I have sometimes seen them, and the Peas encouraged to flow over the top of the pot as they progress, aiding them a little whenever the tendrils seem inclined to disarrange the proper spreading of the shoots, they will have a very pretty effect by-and-by. They will require plenty of water and a small quantity of some artificial stimulant, such as Gould's compound or Standen's manure. Outside the windows they may be planted in boxes, and either be suffered to hang down or be trained up. Anyone having a flower border may fill their empty pots with various plants from that source. Many hardy plants are well worth potting up in autumn and making a special feature of, without any reference to losses or deaths of other plants from severe weather. Hardy Primroses of the common type in various colours are now in bloom in a cold house; so are Polyantheses, and Alpine Auriculas are, in some instances showing their trusses, and such things at this season are more capable of giving pleasure than half dead and withered specimens of Pelargoniums, &c. They should be potted not later than September, and be set on the north side of a wall or fence, and well supplied with water. In November plunge the pots in coal ashes, and if severe frost sets in before they are required for the windows scatter a little dry litter over them, or a few evergreen branches laid over them will suffice. Bulbs of all kinds may be potted up for windows, and if that operation be carefully done they will experience no check. I have lifted clumps when in bloom and potted them without injury, and they may be returned to the border when their flowering season is over.

Of hardy shrubs, especially evergreen kinds, more use might be made for the decoration of windows, both inside and out, than has hitherto been done. One now and then comes across a window, like an oasis in the desert, where a special feature is made of them, serving to show how bright a window may be made with plants that are virtually frost proof. All the Barberries are adapted for pot culture, the dust easily washes from their hard, glossy foliage, and they continue in good health, if well supplied with water, for a long time. I know many plants that have been in use for several years, plunged outside in summer and brought indoors again in winter. Amongst them are Laurustinus, Aucubas, Euonymuses, &c. In fact, there is no lack of materials where the necessary time and

thought can be given to the subject, and the expense is not great in the case of those who attend to their wants themselves.

E. HOBDAY.

AN AMATEUR'S GREENHOUSE.

It strikes me sometimes that those able writers who give us such excellent directions as to how greenhouses are to be managed, what plants are to be in flower, and how they are to be made to look gay at all seasons, shoot over the heads of a great many people. They have charge of places, where, I will not say unlimited means are at their disposal—for no one has that—but where expense is little thought of, plenty of hands are employed, and the difficulties of a shallow purse and crippled space are “unknown quantities.” They are somewhat like the poor Queen Marie Antoinette, who wondered the people could be in want when such good cheesecakes could be had; or that illustrious Duke of our own country who suggested, at the time of the Irish famine, what a good thing curry powder would be to the destitute—“a pinch of it would be so warming!” They knew not the status of the people whom they really wished to benefit. Now, it is no disparagement to the overseer of a garden with its range of stoves, greenhouses, pits, &c., that he cannot understand the struggles for existence of the owner of, it may be, one greenhouse and a few garden frames. It is more his good fortune that he is in the midst of such an Eldorado of gardening wealth, rather than in the poor little surroundings of the suburban villa or the country parsonage. Now, I happen to have a great love for a garden, but I have also a somewhat slender purse; and, as I have for a decade of years had a good deal of enjoyment out of my greenhouse (for I have only one), it may be that my experience, taken from a lower level, may be of interest to many similarly situated. For their benefit I will detail my experience.

Let me say, then, what my object is; I am fond of having flowers in my sitting room. I have, too, a *placens uxor* who is apt at arranging them, but who would be the reverse of *placens* if she were not regularly supplied with them. My object then is, during the winter, spring, and early summer months, before there is a copious supply of outdoor blossoms, to be able to gather a few flowers to add to the foliage which is always obtainable.

To attain this, I have one greenhouse, or rather two joined together. The upper one is a span roof, 20 ft. in length, 12 ft. wide, and 11 ft. high. The lower one is a lean-to, 13 ft. long. This lower one has in it a couple of Vines (Black Hamburgs), so that it can only be used for certain odd purposes which I will detail, and not for growing plants. To heat it, I have a common fireplace and drain pipes. Of this more presently. The centre walk of the house is formed of battens 3 in. wide, with spaces between, under which I can stow away, out of sight, *Lachenalias*, *Tropaeolums*, and such like plants, when they have done their duty. The stages are on each side, level, 4 ft. 6 in. wide, composed in the same way of battens, instead of shelves, leaving clear spaces between them for the water to run down. As they are some feet from the ground, there is room underneath where I can stand at times *Vallottas*, and other plants which are going to rest. Over the centre path I have a shelf, which runs down two-thirds of the house, and on this I place some square boxes with cuttings of *Pelargoniums* for putting out in the summer. I do not “go in” for bedding out, and these are enough for adding to the herbaceous plants in the borders, while quite at the end there is a small shelf, somewhat lower than the stage, where I can place one or two tall plants. When considering how I should heat this so as to keep out frost (for it would be idle for me to attempt anything more), various plans were suggested to me. Boilers of different kinds were proposed, but I felt that there would be a great expenditure of power with the smallest boiler I could get, much of which would be wasted. A brick flue I was aware was generally objectionable, as I knew how often the smoke escaped and how difficult it was to keep it clear; and so, at the suggestion of a clever jack-of-all-trades (but one who is good at all), I determined to try drain pipes. Those which I procured were what are ordinarily called 6 in. pipes in diameter, and glazed. About 8 ft. from the furnace was built an ordinary flue, as the drain pipes could not bear the heat of the fire so close to them; these were then laid round the house

close to the wall, turned into the lower house, and thence into the chimney. This did its duty well, so far as keeping out the frost was concerned; but I experienced considerable inconvenience owing to the accumulation of soot in the pipes, and the consequent necessity of taking out the elbows several times during the winter, and, as this disarranged the level of the pipes, it became necessary to make some alteration so the man whom I had employed before suggested that instead of carrying the pipes all round, they should be brought somewhat more into the house, and that three places should be made of brick with a tile on the top, from which all parts of the piping could be reached. This would be made clearer by a small diagram, but in default thereof, I would say that the brick flue of about 8 ft. is built close to the outside wall of the house, the piping then takes a slant towards the inside instead of, as before, running parallel with the outside. The length to the first opening, which is in the centre of the house, is about 7 ft., then a straight piece across to the next opening of about 4 ft., then another slanting piece of about 7 ft. to the third opening, and then another piece of about 8 ft. to the end of the house. I am not quite sure of the exact measurement (being away from home) but it is near enough for all practical purposes. We have had now a pretty severe spell of frost, and I have found that, by banking up the fire between nine and ten o'clock, it keeps in all night, and frost is excluded. I would, therefore, from my own experience of some years, say to all who wish to heat a greenhouse of the size of my own or smaller, that the cheapest and easiest managed is such as I have described. It may be very unscientific, and may cause a smile on the faces of those who have Duplex, saddle, and all other kinds of boilers at their disposal; but, after all, the question is what answers one's means and objects.

The house itself is cheaply built. There are no movable sashes in the roof; the glass is simply laid on the rafters, while there is one small sash about 2 ft. square in the centre for ventilation. By this I mean that there are no sashes in the roof; however desirable they may be, they add very much to the expense, and as economy was my object, the rafters were glazed in the usual way with putty, for I was not rich enough to experimentise with some of the new methods of glazing, which seem to supply a want in horticulture. The sides are glazed in the same way, but there are three small sashes on each side for giving air, while over the door there is another, and also one at the further end. Thus there is abundant facility for giving air; and, as the house stands out in the full blaze of the sun, it becomes very necessary in the summer. I have adopted for shading some of Collinge's shading, nailing it on the inside of the house, and leaving it up all the summer. I find that it is not sufficiently thick to draw the plants at all, and yet sufficiently so to ward off the direct rays of the sun.

Such is my amateur's greenhouse. It was inexpensive in the first instance, and is equally so in keeping it up. In another paper I will detail the manner in which it is utilised; and I can only say that I very much doubt whether many persons with ranges of houses at their disposal have had more enjoyment out of them than I have had out of my humble effort.

DELTA.

PREPARING LILACS FOR FORCING.

THOSE of your readers who visited the Paris International Exhibition must have envied the success achieved in producing the pot Lilacs for early flowering, and yet their cultivation is of the easiest kind. The best varieties for the purpose are Charles X. and Dr. Lindley worked on the common Lilac, which may be procured abroad from the open ground for a few shillings per dozen. These should be planted out in a sunny border and closely cut back so as to induce fresh growth. In the autumn three or four of the strongest shoots should be again cut back to the first pair of buds and the remainder may be entirely removed, as six or eight flowering branches are sufficient for the first year of blooming. About the middle of the following August, or not later than the 21st, the plants should be lifted and as much as possible of the soil shaken from the roots, and, at the same time, all coarse root-growths should be removed. They should then be potted in good soil

in 6-in. or 7-in. pots and placed in a cool situation and well watered. They will receive no check by this treatment, and by the end of the year they will have made abundance of fresh roots, and probably every branch will terminate with two or more flowering buds, which may be known by their plumpness. If any doubts exist of their being such, it is advisable to cut one vertically through the middle with a sharp knife, when the flowers may be easily distinguished. If there is reason to believe that all, or nearly all, are leaf buds cut the shoots closely in, and plant out again, so as to induce a stronger growth for the following year. If in June or July any grow too vigorously they should be checked, either by partly cutting the roots, or by lifting the plants up bodily with a fork and then replacing them in the hole without pressing the soil too closely round them, so that by the check the shoots, when fully matured should not exceed 12 in. or 18 in. in length. Thus prepared they will be ready for forcing early in the year. After flowering cut them back to the old wood, and place them in a cool frame till April, when they may be planted out, and the same treatment followed as directed in the first instance. As the plants can only be successfully flowered every alternate year they should be cultivated in two batches, so as to have one in bloom each year, and by ordinary attention they may be kept in a flowering state over a long series of years. Periodically the root must have a thorough cutting in, so as to be able to pot in reasonable-sized pots. This is best performed in August after the first cutting in after flowering. If it be desired to have white flowers they may be obtained by forcing with a temperature of 60° to 70° in a perfectly dark room or closet, slightly ventilated so as to prevent moulding. So soon as the heads of flowers are fully developed, and the flowers begin to open, the plants should be gradually exposed to the light previous to planting in the conservatory.

T. B.

BOTTOM HEAT.

The most noticeable feature of Mr. Baines' reply to my remarks on this subject (p. 127) is the complete abandonment of the plea set up by him that in growing plants without bottom heat he was acting in conformity with Nature. I am myself ready to acknowledge his success as a plant cultivator, and at the same time prepared to prove, from his own statements, that he never grew his plants successfully without furnishing them with a root temperature "in a volume equal to that in which the heads of the plants are placed," though he has now told us that such a practice is "diametrically opposed" to Nature. Let me just state here, however, that the question under discussion does not relate to the mode of applying bottom or root heat. On that head people differ, but simply to the propriety of furnishing it in some form or other. To prove what I say your readers have only to refer to the numerous articles Mr. Baines has written on plant culture, but I will content myself with quoting from what he has written in *THE GARDEN*, more especially because his articles relate to some of the very subjects, which he now tells us he grew without bottom heat. In *THE GARDEN*, last April, he recommends a temperature of 70° or thereabouts as a night temperature for stove plants, and a proportionate rise by day; and last August, writing on the culture of *Ixoras*, which he grew in his stoves along with other plants, he tells us that the temperature of the house from the beginning of May throughout the summer might range from 70° to 76° minimum to 95° maximum, or a few degrees higher, with shutting up, &c.—shortly, we may say from 70° to 100°, which is about the ordinary heat of stoves in summer. Now, the mean of these figures is 85°, and this is the temperature at which Mr. Baines kept the roots of his stove plants, for I do not suppose he or any one else will dispute the fact that the mean temperature of the soil in the pots of plants cultivated under glass is just equal to the mean temperature of the air of the house; no body can be either hotter or colder than that which heats it. Notwithstanding these facts, however plainly deducible from all that Mr. Baines has written, he tells us, in his article on bottom heat, that when the heat of his stove had risen above 80° he lifted the plants out to keep them cooler. The said bed, it is further stated, was heated by pipes or fermenting materials. How, therefore, he kept the temperature of the bed lower than the air by which it was surrounded under these circumstances is a puzzle which he alone can explain. And, says Mr. Baines, referring to the results of the practice above described, "I have on this system cultivated individual plants for twenty years, and have had them as strong and vigorous then as during the earlier portion of their existence." What better testimony could any one

want in support of that practice which Mr. Baines now condemns. In conclusion, I would only state that my own practice in no way differs from that of Mr. Baines', only he describes his practice wrongly. I never plunged our hot-house plants of any kind in a bed heated by pipes or fermenting materials, but have always placed the plants on the bed or the shelves, as the most practicable method of conforming to the conditions under which they exist naturally as regards root temperature. I have plunged little else besides Pines and pot-Vines, and in their case it was done more to provide an equable degree of moisture at the root than anything else, for I was always careful to see that their bottom heat did not exceed the mean of the top-heat, which they would have received all the same had the pots been set on the surface of the bed, and I have stated as much as this before in some of the earlier numbers of *THE GARDEN*. I would just add, also, that it is clear that Mr. Baines, in his lengthy article in a contemporary, attributes evils to bottom-heat that are really caused by plunging the pots in the bed more than anything else. I allude to his complaints about the plants drooping and fading when taken to exhibition or elsewhere. The very same happens to plants growing vigorously that are plunged in a cool bottom out-doors, when they are lifted out of the plunging material, as any one knows who has had much to do with plants. That great gardener, Knight, because he did not use the bark bed to plunge his plants in was cited as one who did not believe in bottom heat, but he "disavowed entertaining any such sentiments," pointing out, as I have done in Mr. Baines' case, that, although he did not plunge his plants, their roots were not subjected to a lower temperature than that to which their tops were exposed. How Mr. Baines has overlooked a fact so palpable in his declamations against bottom heat during the past few years I cannot understand.

Wortley.

J. SIMPSON.

[Here this discussion, we think, should cease.]

WINTER CONSERVATORY PLANTS.

MR. FISH (p. 128) says he is surprised to find *Hedychium* and *Monstera deliciosa* included amongst plants suitable for conservatory decoration in winter, and adds that even the hardier *Ficus elastica* would soon look "seedy" if subjected to ordinary conservatory temperature; but allows me to state that I had no thought of summer decoration when I prepared my list from plants actually growing in quantity under the conditions described, and where the temperature was below the minimum of 45° for weeks together; the *Hedychium*, too, had been used on several occasions for hall-room decoration, necessitating their exposure in very severe weather. Treatment of that kind would have killed such plants if they had been kept in a stove temperature, a circumstance that induced me to bring them under the notice of your readers. I know that they keep growing more in winter in a stove temperature, but I feel pretty sure that they may be kept in perfect health without it. I may mention that we have a fine plant of *Monstera deliciosa* growing and fruiting on the back wall of a Vinery that has had only fire heat enough to keep out frost, yet it looks as healthy as need be. The *Hedychium* with their tall, Canna-like leaves and stems, and the *Monstera* with its large and handsome foliage, are plants distinct in character, and anyone trying them as permanent occupants of the conservatory will have no reason to regret it. Does not Mr. Fish remember the fine plants of *Hedychium* *Gardnerianum* that used to grow and flower so well in the large conservatory at Chiswick in years gone by? It is by growing such plants in high temperatures and then removing them to a lower one that renders them unable to withstand cold. Fruiting plants like the *Monstera* and growing them for the decorative properties of their foliage alone are two very different things; for fruiting it should have a Pine stove temperature. Another subject is suggested by Mr. Fish's communication, viz., the inadequate heating power so often used in conservatories. It is well known that there is nothing more wasteful than boilers and pipes too small for what is required of them. Small boilers are bad enough, but small pipes are worse, for where the water has a long distance to circulate, though hot enough when it leaves the boiler it gets a quite cold before it reaches the extreme divisions. Such a winter as the past is useful occasionally, if only to settle the merits of what are called heating apparatuses, as many of them cannot bear so severe a strain as that to which they have lately been subjected.

J. GROOM.

Linton.

Diplacus or Shrubby Mimulus.—I find plants belonging to this section of the *Mimulus* family most useful for many purposes. They last long in bloom and are easily grown; they do well in a heated pit or cold greenhouse, in any place, in short, out of the way of frost. Give them water enough in winter to keep them from getting dust dry; in spring prune them and pot and grow them on,

and during summer they will make good plants either for the conservatory or for house decoration. Cuttings struck in spring and grown on rapidly also make useful plants, and bloom well through the autumn months. One or two good kinds are Golden Pheasant, Gordon's Stella, and a sort known by the name of antarcticus. All these bloom well if planted out in spring in the open borders and taken up for winter decoration.—J. C. F.

PROPAGATING.

ANTIRRHINUMS.—These are best propagated in September; take well-drained 4-in. pots and fill them with rather sandy soil; select the cuttings from young side shoots, and make them as shown in fig. 1; insert them firmly with a small peg



Fig. 1.—Cutting of Antirrhinum.

and give them a good watering with a fine-rosed pot; place them in a cold frame out-of-doors and cover them up, sprinkling them over very slightly every morning, and leaving them open for an hour to dry the leaves if the weather be favourable. In about three weeks they will emit roots, when they may be gradually hardened off, and either potted into store pots or kept



Fig. 2.



Fig. 3.

Cuttings of Antirrhinum.

in the cutting pots on a shelf in a cool greenhouse during the winter; keep them rather dry and pot them off in February. In order to increase scarce and new sorts cuttings may be made in spring, using either single or double eyes, as shown in figs. 2 and 3; fig. 3, split down the centre, may be made into two like fig. 2; they must be placed on a gentle bottom heat in the propagating box, and will be ready to take out in ten days to gradually harden off. H. H.

Sizes of Propagating Pots.—Opinions differ as to the sizes of pots best suited for striking cuttings in; some think 3-in. ones best, others 6-in. ones. My own opinion is that size is of little consequence; some do best potted singly at first, and then the roots do not get broken in potting, as they can be transferred from one pot to another without injury in any way, a point of great importance in the case of brittle-rooted plants. My intention now, however, is to point out to the inexperienced the way in which 8-in. pots may be used to the best advantage; I prefer them, in fact, to either 6-in. or 7-in. pots. In the case of 8-in. pots, instead of putting crocks in them in the usual way, take a small thumb or other pot, according to depth (as they differ in that respect from most potteries), and invert this upside down in the large one; then fill all round it to just above its top with small crocks; on this put some rough material to

keep the drainage open, and then fill up with soil in the usual manner. In this way I have found cuttings to strike as quickly and as well in the centre as round the sides of the pot; the inverted pot forms, as it were, a chamber by means of which the bottom heat is equally distributed all over the pot, and the soil does not remain wet so long in the middle as it otherwise does, causing the cuttings to damp off, especially such as *Verbenas* and those of a similar character. I have found pots crocked in the way just recorded useful for starting such plants as *Alternantheras*, *Coleuses*, &c. I put the pots in evaporating troughs and keep them filled with water; here cuttings of such plants strike in a very short time. Now, when the demand for summer bedding plants is great, one has to make all sorts of shifts where there is no proper propagating house.—J. C. F.

PLANT CULTURE FOR MARKET.

Indoor Flowers.

CALCEOLARIAS, both of the shrubby and herbaceous kinds, are grown for market; but the former are offered in the greatest quantity. An improved variety of *C. aurea* is most sought after. It bears large trusses of bright yellow flowers, and is dwarf and compact in habit. Cuttings of it are struck in cold frames late in autumn; their shoots are pinched back early in the year, and they are potted into 5-in. pots and kept in a half shady cool house or pit close to the glass, when they throw out abundance of flowering shoots. The soil used is loam, leaf-mould, and road sand.

MUSK does not pay for growing to any great extent, except for early work, but florists grow it to fill in between larger plants sent to market. Pieces of the roots are taken up, placed in 5-in. pots, and put in heat soon after the turn of the year, or earlier, when good flowering plants in spring are the result. The Giant Musk sent out by Messrs. Harrison & Sons, of Leicester, makes a good market plant; both its flowers and leaves are large, and its scent is as good as that of the common variety, and it grows equally well in window-sills or rooms.

LILACS are forced for the sake of their blooms in winter. The earliest supply comes chiefly from France, where the plants are grown in the dark, in order to make their flowers become white. The plants to be forced are lifted from the open ground, potted and placed in heat, keeping them well syringed overhead. When the blooms begin to open, mats are placed on the roof of the house or pit and round the plants in order to shut out light, and in this way almost pure white trusses of flowers are produced. After flowering, the plants are again turned out of doors. Forcing in strong heat has also the effect of making the flowers white.

LOBELIAS are grown in large quantities in pots. They are chiefly struck from cuttings put in in the autumn. When rooted, they are potted into 6-in. pots, placed close to the glass, and receive plenty of air and water. Thus treated, they become compact, floriferous plants in May and June.

STOCKS are grown by thousands for planting out in beds during the summer. The seed of the Intermediate variety is sown late in autumn in cold frames, and when up the largest plants are selected for pot culture; the others are allowed to remain till they are fit for sale in spring. Some plant Stocks out-of-doors, and lift them into pots when in bloom.

ASTERS are sown in spring in heat, and planted out in good rich land. When in bloom they are potted early in the morning, whilst the dew is on them, and sold when fresh and bright; before the day is over, however, if a hot one, they look just the reverse, the shift rendering them unable to withstand strong sunshine.

BEGONIAS of the *Weltoniensis* and *Saundersi* types are grown largely for market; also an unnamed seedling kind with pure white blossoms, which are produced in abundance from amidst a mass of dwarf, stocky foliage. The *Saundersi* variety is very floriferous, large trusses of scarlet and pink blossoms hanging in profusion from every shoot. Begonias are well adapted for decorative purposes, as they are easily grown and last in flower for a considerable time.

To the above may be added *Veronicas*, *Epiphyllums*, *Ixias*, *Sparaxis*, *Petunias*, and *Clematis*, all of which are sent in quantity to market, both in the form of plants and cut flowers. The Mock Orange, too, is grown by a few florists planted out in fruit houses, where it yields abundance of blossoms early in spring, which are much prized for bouquets.

THE LAURUSTINUS is grown largely by some growers for forcing into bloom at Christmas. At that season, owing to the dullness of the weather and the forcing, its blossoms come much whiter than those produced at their natural season out-of-doors. Plants for forcing are generally obtained from the Continent or from nurseries in which they are largely grown for supplying the trade. They are potted in October and November, and introduced into a warm temperature under which, with plenty of water at the roots and frequent syringings overhead, they soon open their bloom. After flowering, the plants are either plunged in beds of ashes or soil out-of-doors, or are turned out of their pots into good soil until the following autumn, when they are forced as before. A few growers, however, raise their own plants, and dispose of a quantity of them when in a small state for window decoration, &c. In this case cuttings are taken off in August and September, when the wood is becoming firm, and are inserted thickly in pits or frames, into which have been introduced a few inches in depth of sandy soil, made firm. They are kept close for a few weeks, after which air is freely admitted. By the spring they will have made good roots, and they are then transplanted into prepared beds of rich sandy soil in the open air. Here they remain for about two years, when they are lifted and potted, allowing a little room for the roots to expand. After this the pots are plunged in a sunny position, and shifted on into larger pots as may be required. Some have their stems kept clear of shoots, so as to form standards; others are allowed to grow naturally into sturdy bushes. When they have become well-established plants in 6-in., 8-in., or 9-in. pots, well set with buds, they are moved into the houses in November and December, to open their flowers. By inserting a quantity of cuttings every year, a succession of good plants is thus kept up.

The foregoing list might be considerably lengthened, but the subjects mentioned form the leading market indoor flowering plants grown in and about London.

Outdoor Flowers.

Market gardeners who grow fruit and vegetable crops find it remunerative to grow hardy flowering plants between them and in positions, such as under the shade of trees, where other crops would not succeed satisfactorily, some of these flowering plants do well. The most important under-crop of this kind is that of Moss Roses, to which reference has already been made, but the following are also profitable and much grown:

WALLFLOWERS.—In favourable seasons early planted Wallflowers afford abundance of cut bloom throughout the winter, and in February and March good prices are obtained for it; even in April Wallflowers realise fair

prices; but after that they become very cheap indeed, good large bunches of them being often sold for 1d. and 1½d. each. The advantages of early sowing and planting, so that blooms may be procured in fair abundance through the winter, and in large quantities in early spring, are, therefore, at once apparent. From March to April, and even earlier in mild seasons, Wallflowers are brought to market in waggon loads. The blooms are cut with stalks from 6 in. to 9 in. long, and are tied in bundles, as large as can be grasped with both hands, with small withes or bast. They are usually grown between fruit trees or in other shady places, where they thrive remarkably well. In the neighbourhood of Isleworth, Twickenham, and Feltham, hundreds of rows of them nearly half a mile in length may be seen. The seed is sown broadcast in beds in the open air in February, and when the plants are large enough to handle they are transplanted into rows from 12 in. to 15 in. apart. During summer, if the place which they occupy be very much shaded, they often become a little "drawn," but as the leaves fall off the trees in autumn they begin to branch out and grow rapidly, and by December many of them are in bloom. After all the flowers have been cut, the plants are dug up and thrown away, and are replaced by young seedlings, which are by that time ready for transplanting. Before planting, however, the ground is always liberally manured and deeply dug. Market gardeners never keep Wallflowers more than one year, young plants being always found to produce the most and best bloom. Seeds are saved from plants possessing the best branching habit, and which bear the darkest-coloured blossoms; when in flower the plantations of them are gone over, and plants possessing these qualities are marked by placing a stake by the side of each. These are allowed to remain undisturbed until the seed is ripe, when they are pulled up, roots and all, and housed in a dry place until a convenient season arrives for threshing out the seed. The old-fashioned market garden Wallflower is the kind still sought after; it is found to bloom better and earlier, and the flowers, which are dark and rich in colour, realise more money in the market than those of any other kind. When plentiful, Wallflowers are not taken into the flower market, but are disposed of from the waggons outside the building to hawkers. C. W. S.

The Pampas Grass in avenues would doubtless, as A. D. suggests (p. 118), have a grand effect if properly treated, and it might also be planted by the sides of carriage drives, if of any length where a good bold curve could be secured. Supposing the drive to be about half a mile in length, I would plant it as follows. Commencing at 25 ft. from the drive, I would plant alternately at 30 ft. apart *Deodars* and *Araucaria imbricata*, and midway between each of these, and 10 ft. nearer the drive, a plant of *Pampas Grass*. At 30 ft. from the *Pampas Grass* and exactly behind it, I would use alternately *Wellingtonias* and *Cupressus Lawsoniana*. If space could be allowed for a third row of *Conifers*, I would select *Cedar of Lebanon*, *Picea nobilis*, *P. grandis*, *P. Nordmanniana*, *Abies Douglasi*, and *A. Smithiana*; and at 40 ft. from the *Conifers* I would have a double row of deciduous trees to form a shady walk. They should be 15 ft. apart each way, and might consist of *Limes* and *Chestnuts*. The *Araucaria* and *Deodar* like a deep sandy loam, or peat; therefore if planted in wet heavy ground, it should be well drained, and the trees should be planted on slightly raised mounds in suitable soil. The *Araucaria* soon loses its lower branches if planted in wet heavy land, but when seen as at Bearwood it is a grand object. The style of planting here indicated is more suitable for curved than for straight drives, and the greater the length the grander the effect would be. *Elms* or *Chestnuts* doubtless are the most suitable for straight drives, yet I have often thought that the Oak might be used for avenues, as it is much more durable than either of the former, and is in every respect a grand tree.—W. L., Reading.

PLATE CLXVII.

THE TIGRIDIAS.

(WITH A COLOURED PLATE OF *TIGRIDIA PAVONIA GRANDIFLORA*).

Drawn by Miss PIERREPOINT.

To the numerous, and, for the most part, showy family of Iridaceous plants belong many garden favourites, but amongst them few can rival the Tigridias, especially the variety represented in our plate; indeed the magnificent colour, added to the singular conformation of the blossoms, can scarcely be surpassed by any plant in cultivation. Yet, singular as it may appear, Tigridias of recent years have held but an inferior position amongst outdoor garden plants; whereas, fifty years ago they formed, with other half hardy bulbous plants, one of the more important features in most gardens. Happily the taste for them is evidently reviving, and we shall have gained our purpose if the present illustrations and accompanying remarks tend in any way to increase their popularity, and place them once again amongst the finest outdoor plants cultivated by the many. According to the latest revision of the Order by Mr. Baker the genus consists of about six species, comprising *T. Pavonia*, with its numerous forms, and the Shell Tiger Flower (*T. conchiflora*), which is classed as a native variety of *T. Pavonia*. The remainder include those formerly known as *Beatonia*s, but, as their flowers are very fugitive and somewhat small and dull in colour, they cannot be considered generally speaking of much horticultural interest. These are *T. atrata*, with greenish flowers, pencilled with dark-coloured spots like a Fritillary, *T. curvata* and *violacea* with purplish blossoms. *T. lutea* and *T. Van Houttei*; the former with yellowish flowers $1\frac{1}{2}$ in. across, spotted with purple, is figured in a late number of the "Botanical Magazine"; the latter is the latest addition to the genus. It grows about 1 ft. high, and has purplish flowers $1\frac{1}{2}$ in. across. It was raised from seeds received from Mount Islapalapa, in Mexico, at M. Van Houtte's establishment at Ghent, and was, moreover, the subject of a coloured illustration in the "Flore de Serres" for 1875. Geographically considered, we find all the species natives of Mexico, with the exception of *T. lutea* which inhabits Chili and Peru. Other kinds of Tigridia are enumerated in trade lists, but most of them belong to totally distinct genera. For instance, *T. undulata* is a Ferrara, plants essentially natives of the Cape. *T. celestis* is *Phalocalis plumbea*, a native of Brazil. *T. Herberti* is synonymous with *Cypella Herberti*, also of Brazilian origin; whilst *T. canariensis* is evidently a misnomer, as none are found in the Old World. It is probably a fine form of *T. conchiflora*.

The Tiger Flower (*T. Pavonia*) is a very old inhabitant of gardens, having been first introduced to them nearly a century ago, and, on account of its possessing a sporting tendency, many seminal varieties have sprung from it, the most noteworthy being *T. Wheeleri*, a kind which has larger flowers, and a shade deeper in colour than those of the type. *T. splendens* and *T. speciosa* are also larger, and their colour is brighter; but description fails to convey an idea of the distinctive points of these varieties. The form *grandiflora*, which we figure, is superior to the type on account of its larger and richer-coloured blossoms, its small, fiddle-shaped petals being more copiously spotted, and the deep green of the plaited, sword-like foliage much enhances the effect, as will be seen by the annexed woodcut. It is apparently a native form, and has been grown and flowered with great success by Messrs. Barr & Sugden, from whose grounds the flowers represented in the annexed plate were obtained.

The Shell Tiger Flower (*T. Pavonia* var. *conchiflora*) differs from the type in being of less robust habit and in the blossoms being bright yellow and spotted with scarlet. That this is but a variety of *Pavonia* is evident from the fact that there are recorded instances of bulbs producing blossoms in which yellow predominated in the early part of the season, and later on the same bulbs bore scarlet flowers.

The two kinds will also intercross freely, the result being hybrids partaking more or less of the character of both sorts, such as *T. aurantiaca*, *Pavonia-conchiflora*, *intermedia*, all of Continental origin, and *Watkinsoni*, produced some years ago by Mr. Horsefield, of Manchester, with flowers like those of

conchiflora, and a habit very like that of *T. Pavonia*. The only detracting point connected with these charming flowers is that they display their beauty but for a day only; this is, however, compensated for by each stem bearing a continuous succession of blossoms during the flowering season, so that it is advisable to plant in groups, in order to obtain a continual show of flowers.

As regards culture, about the end of March prepare a bed for them, and if in a partially shaded position so much the better; thoroughly drain it with rubble, &c., placed at a depth of $1\frac{1}{2}$ ft. or 2 ft., and fill in with a compost of rich loam and well-decayed leaf-mould in equal quantities, with a good sprinkling of sand, all being well mixed up together. In the first or second week in April plant the bulbs from 5 in. to 6 in. apart, and 3 in. deep, placing a little sand under and around each. They will require no further care, except, if the weather be dry, giving them slight waterings up to the time when they begin to expand their blossoms. When the foliage becomes decayed in autumn, the bulbs should be carefully lifted and tied in bunches of about twelve, according to their size, and

*Tigridia Pavonia grandiflora.*

hung in a cool, airy place until next planting season. Some cultivators allow the bulbs to remain undisturbed during the winter, and in warm localities and in light soils, perhaps, it is advisable for a year or two; but, as a general rule, the plan recommended is preferable, as it entails but little trouble, and the bulbs are at hand for the purposes of propagation. The latter is effected by means of offsets, which are freely produced, and if carefully removed and treated as above, they will flower the second year. Seeds afford a wholesale means of propagation. They should either be sown as soon as ripe or in the following spring in shallow pans, and placed in a heated frame or greenhouse. As soon as the seedlings are of sufficient size they should be pricked off into other pans, after which they should be treated as matured bulbs, and in the third and fourth season they will produce blossoms.

W.

Storks in Gardens.—At Ferrières, for the last four years a pair of storks, male and female, have been in the kitchen garden, and also another pair in an enclosed nursery where Conifers, Roses, Strawberries, and such like are grown. These birds have been found most

useful, destroying such pests as adders, slugs, worms, mice, moles, snails, spiders, flies, &c. They walk about in the garden from morning till night doing their work, and they spoil nothing, touching nothing whatever, either fruit, vegetable, or flower.

TREES, SHRUBS, & WOODLANDS.

USEFUL CONIFERS.

I QUITE agree with all that Mr. Baines (p. 106) has said in favour of *Pinus Laricio*, and would strongly recommend its being extensively planted in woods and plantations with a view to profit, for, unquestionably, it is one of the most valuable of all the Conifers, and succeeds well where many others would fail. Near the sea coast, for instance, it grows with a vigour equalled by few, but in such situations there should be plenty of other things planted with it to assist in breaking the force of the winds, and, when thinning is done, it should be gradual, as those left get cut about through sudden exposure, and sometimes completely uprooted. It seems a pity that so much ground should be occupied about the country in the growth of so many trees that are quite worthless for their timber, and more particularly so as we are dependent, in a great measure, for all we use on the supplies we get from abroad, but, somehow or other, Spruce appears to have been the favourite with our foresters, but why this should have been so I am at a loss to conceive, as it has no special merit beyond its symmetrical shape in an ornamental point of view, and in other respects it is quite worthless, unless it be for using as fuel. There is another Conifer to which I would call attention, which is *Abies Douglasi*, the wood being close grained, hard, and tough, and so full of resinous matter that the weight of it greatly exceeds that of the Larch. As to growth, planted on the same soil, it seems a race between the two which shall obtain the greatest altitude in the shortest space of time, but, conditions being about the same, there is not much difference in the rate of progress, either in an upward direction or in the girth of the stem. Up to the present their price has been against a more extensive use of them for planting, but, as Mr. Baines points out, this ought not to be so much a consideration, as with this and the *Pinus Laricio* it is an easy matter, when forming fresh plantations, to place these at wide distances to allow space for their full development, and then fill in between with Larch, Scotch Fir, and other commoner things, to act as nurses and draw the others up, and thus prevent the spread of side branches, which, if allowed to have full play, rob the leader and spoil the quality of the timber by causing large knots in the planks. The Douglas is a Fir that likes plenty of shelter, and therefore comes in admirably for filling in blank spots in woods where there is sufficient light and room upwards, and when they can be so favoured, it is surprising the headway they make. In open positions the inclination of *Abies Douglasi* appears to be to spread and make the most growth in a horizontal direction, but, checked by being surrounded by others, it rushes up at the rate of 3 ft. in a season. Where a few choice and distinct-looking Conifers are required for ornament to plant in conspicuous places, the following will be found about the most desirable:—*Picea grandis*, *P. nobilis*, *P. Nordmanniana*, *P. magnifica*, and *P. cephalonica*, the latter of which should be so situated as to be not only sheltered by other trees, but where the sun does not strike it early in the morning, otherwise it is apt to get its soft buds injured by spring frosts on account of the early growth it makes. Among *Pinuses*, besides the one already named, *P. austriaca* is deserving a place in any grounds of sufficient extent to accommodate this class of plants, as is also *P. Lambertiana*, the rich deep green of which is quite pleasant to look upon, and shows up in fine contrast against several of the foregoing that have more of a silvery hue.

S. D.

***Paulownia imperialis*.**—I send you herewith a sprig of flower-buds out the other day from the head of a *Paulownia* about twenty years old, growing here in a sheltered garden a mile from the shores of Mount's Bay, in Cornwall. The tree in question flowered, but feebly, in May, 1878, and once before. The specimen which I send is one of several sprigs, and is one of the smallest. I was surprised to find the buds apparently uninjured by the long and severe win-

ter from which we have just emerged. Does the *Paulownia* usually form its flower-buds at the close of the season, and does it often flower in England?—J. J. ROGERS, Penrose.

"TREES OF THE FUTURE."

I CAN endorse all that Mr. Woodall says (p. 71) respecting the merits of the Cedar of Lebanon, and still more so of the Mount Atlas Cedar, and of the great mistake that is made in planting the Decid. in preference to the Mount Atlas Cedar, especially when introduced as the Decid. is, by hundreds, into places suitable or unsuitable without any apparent reflection or consideration. With equal justice the same may be said in regard to the large amount of Coniferous and Taxaceous trees that have been brought into the country within the last forty years, and concerning which, despite their handsome appearance and the free growth which many have so far made, there is yet a good deal of uncertainty as to how they may behave in this climate. There are few who will attempt to gainsay the desirability for as much variety as possible in the trees employed for decorative planting in parks, or in what are usually designated dressed grounds in the more immediate vicinity of dwellings, be such grounds more or less in extent, but there can be little question that in situations like these the choice is frequently in favour of uncertain novelties rather than of trees that are not only well proved as to their hardiness, but also as to their superiority for effect in the positions to be occupied. This is not simply a mistake in the ordinary acceptance of the term, but one that is fraught with consequences that will take longer to correct than those who fall into it are likely to see fully rectified. But, at all events, there can be little doubt that amongst the introductions that have appeared within the last half century from California, Chili, and later from Japan, some will be found in every way deserving of being classed as trees of the future in such positions as I have named, and probably for grouping in considerable quantities in woods, where masses of dark evergreen foliage, as well as diversity of form, are alike desirable, independent of what may turn out to be their value as timber trees. But in speaking of what are to be the trees of the future, the subject embraces a much wider field than woods and pleasure grounds combined, when we look at the whole surface of the land collectively and notice what is being done, or rather left almost wholly undone, in the shape of planting trees to take the place of those existing. I am aware that from a purely cultural point of view trees in hedgerows, as well as singly, or in groups in cultivated ground, are looked upon with disfavour; but imagine them all removed and I think even those who entertain the most utilitarian ideas on the matter would hesitate before the broad landscape of the entire country was made treeless in all except such as are comprised in woods alone; yet with a few exceptional properties, this is the direction in which matters are gradually approaching, for direct our course where we may through almost any country in the kingdom, we may go scores of miles without seeing a single tree planted (except as I have already stated in the immediate vicinity of dwellings, or in the few places where new plantations of some extent are being made) to take the place of the trees that now dot the landscape, and of which it may with truth be said nineteen twentieths are at present past their best, and surely, if slowly, on the wane. Where there is one extensive landowner who is mindful of this, and who makes corresponding provision for the distant future, there are a score who never give it a thought, or allow thinking to suffice. This may no doubt be attributed to the fact that tree growth is slow, extending over the time allotted to not one but a good many generations. In musing over the subject the thought often occurs, what at some distant time will be the appearance of the country? Will no general movement ever be made until the trees that now deck the landscape are so far gone as to necessitate resort being made to the quick-growing Poplars, so painfully monotonous in some parts of the Continent? Or are the trees of the future, looking at the subject from this point of view, to be found amongst the many comparatively new comers? I think not. Nor is it desirable that they should be, for, like Cobbett's whilom favourite *Acacia*, it is more than likely they would turn out lamentable failures as regards supplying the places of the Oak, Ash, and Elm, which combine excellence in the timber which they produce with general effect not likely to be surpassed or even equalled. Not that it is advisable to exclusively confine the general planting to the above-named; *Sycamore*, *Poplar*, *Chestnut*, *Lime*, and *Beech*, with, for variety, a limited number of others, amongst which ought to be a few evergreen species, should no doubt be added. Much is from time to time said about what are to be the trees of the future. I think, upon a little reflection, it will be seen that such trees as have been in the past should be those of the future, with the addition of the kinds that have been hitherto planted too sparingly.

T. BAINES.

NOTES FROM KEW.

Greenhouse Plants.—Several noteworthy Australian plants are now in flower in the conservatory. Amongst these is the *Fuchsia-like Genethyllis*, a Myrtaceous shrub discovered by Drummond many years ago in the Swan River Settlement. It forms a neat, erect, much-branched bush about 2 ft. high, and on the end of almost every branch is a drooping flower-head, consisting of about six blossoms, enclosed by a row of deep red bracts about 1 in. long. The foliage is small, and has a very agreeable aromatic fragrance similar to that of some of the *Diosmas*. Another charming shrub is *Boronia tetrandra*, which inhabits South-east Australia and Tasmania. It has a remarkably neat habit, and grows about 2 ft. in height, with much-divided foliage consisting of about three pairs of very narrow leaflets. It produces its pretty blush-coloured blossoms in abundance and continues in perfection for a long time. *Stenanthra pinifolia*, a plant belonging to the *Eupacris* family, is also from the same region and an old introduction. It much resembles a *Pinus* in miniature, having clusters of small, needle-like leaves and narrow, tubular blossoms 1 in. long, deep rose-coloured tipped with green. Of the numerous kinds of *Grevillea* none are more deserving of more extended culture than *G. Telemaniana* (syn. *G. Preii*), as it forms one of the most elegant plants imaginable, having delicate pinnate foliage resembling that of the common Southernwood, and numerous terminal pendent clusters of beautiful rich red and yellow flowers of very peculiar structure. It comes from the neighbourhood of Perth in South-west Australia, where it forms handsome spreading bushes from 3 ft. to 5 ft. in height. It is to be regretted that these fine plants from the Southern Hemisphere are not more generally cultivated than they are, as no class of subjects is more serviceable for enlivening our greenhouses during the dull season of the year. Perhaps they may be thought difficult to manage, but if plenty of light and air be afforded them, with due regard to liberal drainage, careful watering, and a good peaty compost as essentials, the difficulty, if any, may be surmounted. *Arctostaphylos tomentosa* is a handsome Californian Bearberry growing about 3 ft. high, with oval, pointed leaves and terminal, dense clusters of waxy-white blossoms. Though treated as a greenhouse shrub it is quite hardy.

Orchids.—*Angrecum eburneum* is a stately epiphyte with large, leathery, sword-like leaves spreading in a fan-like manner, from the axils of which are produced stout, erect spikes, 2 ft. or more in length, bearing two rows of blossoms with a large tip of ivory whiteness, the outer divisions, and also the spur, being pale green. The variety *superbum* has flowers larger than those of the type, and in *A. virens* they are suffused with green, and all are very sweet scented. They are natives of the Islands of Madagascar and Bourbon. One of the best and most useful of the yellow-flowered *Dendrobies* is *D. fimbriatum oculatum*. Its blossoms are borne in graceful, pendulous, loose racemes and are $1\frac{1}{2}$ in. across, of a rich apricot yellow; the lip, which is roundish, is delicately fringed, and has a deep brown blotch in the centre. This section of *Dendrobies* is accompanied by more foliage at the flowering period than occurs with the generality of other kinds, thus much enhancing the effect produced by them. We are indebted to the late Dr. Wallich for its first introduction to our stoves, he having sent it from Burmah many years ago; it also occurs in Nepal, but the coloraceous type is more prevalent at the last-mentioned place. The old *Phajus grandifolius* is probably too well known to need description; still it deserves a passing word. Its ample foliage is handsome, and sets off to advantage the stately spikes of large flowers which last a long time in perfection. *Brassavola cordata* and *venosa* are neat little epiphytes, much resembling each other; the former has a pure white heart-shaped lip, the latter larger blossoms with the lip white and spotted with purple at the base; both are natives of Brazil. Mention was made in the last notes of the African *Ansellia*, and a fine variety of it; another is now in flower bearing the name of *A. gigantea*, though on what ground it merits the name it is difficult to perceive, as it is smaller in growth than *A. africana*, and the flowers are also not so large, but they are very distinct in colour which is a pale sea-green sparsely spotted with brown, and the lip is a rich canary-yellow. The heart-lipped *Odontoglossum* (*O. cordatum*) though not so showy as some of its congeners is, nevertheless, very handsome, its flowers being 2 in. across, white barred with reddish-brown.

Stove Plants.—Foremost in interest and rarity is *Ptychosperma rupicola*, a handsome Palm now in flower in the Palm house. It is about 10 ft. high, with a noble head of elegant spreading foliage, and from the upper half of the naked stem is produced a much-branched inflorescence 1 ft. across, the whole of a deep blood-red colour, with numerous white star-like blossoms thickly studded on the twigs, rendering it very effective. Another Palm of great beauty is the Mexican *Chamodorea Sartori*, of which there are two or three plants, both large and small, flowering freely in the Aroid house. Unlike

the last, the drooping feathery clusters of small blossoms of a deep orange colour are borne amongst the deep green foliage, thereby much enhancing their beauty. In a small state this is one of the best of Palms for decorative purposes, more especially as it produces flowers annually. W.

NOTES OF THE WEEK.

Out-door Camellias.—Mr. Groom informs us that Camellias growing at Lixton Park, Maidstone, in an exposed situation, have passed so far through the winter unprotected without apparently sustaining the least injury. The flower buds remain plump and sound, and promise to open freely. The climate of Kent may be considered a very favourable one, but it is nevertheless evident, that the Camellia might be planted out-of-doors in many places much more extensively than it is. It is even harder than the Laurustins, and therefore wherever that will succeed so likewise will the Camellia; i.e., provided the soil be such as it requires. Good loam, road sand, well decayed cow manure or leaf mould suit it admirably; a mulching of half-rotted leaves or manure during hot weather will also greatly benefit it.

Xiphion planifolium in flower at Bitton.—There is no doubt that this winter will have been most disastrous in the garden, but I am sure it will also be a winter of surprises. My first great surprise is that I have now in flower the beautiful *Xiphion planifolium* (Bot. Mag., 6352), though it has been in full leaf all through the frost and entirely unprotected. This has always been considered to be one of the tenderest of the family, so that it is said in the Bot. Mag., that "it can only be satisfactorily grown under cover." Yet it is wholly uninjured. I think the entire absence of sun may have had something to do with this, as it is very probable that a bright sun upon the fleshy leaves after or during the frost would have been fatal to them. The plant is better known as *Iris alata*.—HENRY N. ELLACOMBE, Bitton Vicarage, Gloucester.

Begonia glaucoflora for baskets.—This is one of the best of plants for furnishing hanging baskets for the conservatory during autumn, winter, and spring. It flowers freely, and plants of it can be grown into a good size in a very short time; cut sprays of it were shown at South Kensington the other day by Mr. Parr, who grows it extensively in baskets for the decoration of the conservatory at Harrow Weald Park, where it contrasts strikingly with *Poinsettias*, and similar plants of an attractive kind.

Wall Shrubs and the Frost.—We noticed on walls in the Pine-apple Nursery the other day, several plants which are not generally thought to be perfectly hardy, much less to withstand the severe test to which they have been subjected this winter. On a low wall in a north-western aspect, *Abelia floribunda* is not in the least injured, nor are plants of *Azara integrifolia variegata* or *Obbonna japonica*. *Choisya ternata* on three aspects—north, west, and south—is fresh, green, and vigorous; and *Greyia Sutherlandi*, though cut to the ground, is otherwise in good condition, its crowns and roots being fresh and plump.—S.

Dendrobium Wardianum.—There will shortly be a fine display of this showy Orchid in the Pine-apple Nursery. The plants have for a long time past been subjected to cool treatment, having been hung up in a house occupied by *Solanums* and other plants. This has had the effect of thoroughly maturing the pseudo-bulbs, and the plants promise to bloom well in consequence.

Lilac Charles the X.—A good display is made by this Lilac just now in Messrs. Veitch's nursery at Chelsea. It is, without doubt, the best variety which we have for early forcing, and by proper management its flowers may be rendered quite white. The plants in question are bushes about 2 ft. high, and as much through, and the number of blossoms which each plant bears is almost incredible. They are grown in 6-in. and 8-in. pots, sizes in which they can be used with effect for dinner-table or room decoration. Associated with them are some very fine *Tulips* and the lovely *Staphylea colchica*, which is likely to be grown henceforward very largely by florists for market, for the sake of its blooms in a cut state.

National Auricula, and Carnation and Picotee Societies.—A committee meeting of the southern section of the National Auricula and also of the Carnation and Picotee Societies, was held the other day in the Royal Horticultural Society's conservatory, South Kensington. Mr. G. F. Wilson in the chair. Judges were nominated for both exhibitions, and the financial affairs of the Society were discussed. Although it is expected that most of the old subscribers will continue to support these societies, there are from various causes some certain to fall off annually. The committee trust that a sum of £10 10s. will be raised for each society by an appeal to those interested in these popular flowers, of which they have taken

special charge. Mr. Dodwell, the financial secretary, 11, Chatham Terrace, Larkhall Rise, Clapham, S.W., kindly offers fifty seeds saved from his choicest named Carnations and Picoetes, to each new subscriber of £1 ls. to the Carnation Society, or to any old subscriber who will add an additional guinea to his or her subscription.

Imported Pine-apples.—Large quantities of excellent Pine-apples have lately made their appearance in Covent Garden Market from the Azores. They are of good size, well ripened, and remarkably cheap, really good fruits being sold at prices as low as 10s. each.

Pavetta borbonica.—This is an excellent fine-foliaged plant for room decoration. Like the well-known *Ficus elastica*, it is erect in habit, and its leaves, which are deep green and netted with dark veins, with a bright red midrib, are thick and leathery; therefore, they can be easily cleared of dust, which is unavoidable in rooms. We lately saw good plants of it in Messrs. Carter & Co.'s nursery at Forest Hill.

LINDEN'S "ILLUSTRATION HORTICOLE."

A DOUBLE number of this admirably illustrated periodical, consisting of parts 7 and 8 of the 25th volume of the work, has just reached us, nearly six months behind time, as these parts should, in ordinary course, have appeared during the months of July and August of last year. The delay has been caused by the serious illness of the editor M. Edouard André. The remaining parts of the 25th volume are to appear at short intervals, and it is to be hoped that the numbers of the 26th volume will be published regularly on the 15th of each month. The double number just received contains the following coloured plates:—A single plate of *Phoenix rupicola*, a most beautiful Palm; a double plate of exquisitely beautiful varieties of erect-flowering Gloxinias, raised by that king of Gloxinia growers, Mon. J. Valeraud, of Asnières, near Paris, and representing the most remarkable and distinct of the many fine hybrids raised by himself, and shown during last autumn at the Paris International Exhibition. They are named as follows:—1, Lucien Linden; 2, Notaire Moens; 3, Marquis Chennevières; 4, Madame A. Lavallée; 5, Duc de Sutherland; 6, Madame P. Joigneaux; 7, Prince de Galles. A double plate of a fine new *Caladium* raised by M. Bleu, so celebrated for the improvements which he has been so fortunate as to make in this class of handsome-foliaged plants, and named Mon. J. Linden. A single plate of a new and beautiful cool stove shrub with large, pure white, tubular flowers, with yellowish throat, somewhat resembling in shape those of *Allamanda nerifolia*, and named *Coutaria Scherffiana*. This is one of the many valuable plants brought back by M. André from New Grenada in 1876, and since flowered by M. Linden at Ghent. It should be a great acquisition to our collections of stove plants. A single plate of a pretty *Bromeliad*, with small blue flowers, named *Tillandsia dianthoides*, but which also seems to own the following varied appellations:—*Pourretia seranthes*, *Amalia erisnicola*, and *Anoplophytum dianthoidesum*. It grows as an epiphyte on the branches of trees in Brazilian forests. A single plate of a graceful terrestrial Orchid, *Dendrochilum filiforme*, also known as *D. glaucum*, a native of Manila, whence it was introduced as far back as 1836. Why such plants should now be figured we are at a loss to understand. The number contains also several interesting and well written articles on variegated-leaved *Pelargoniums*, herbaceous plants at Kew, the flowering of *Vriesia guttata*, Alpine plants as grown at York and Edinburgh, the hybrid *Pelargoniums* of M. Lemoine, of Nancy, *Dendrobium superbiens* of Herr Reichenbach, on the Perret system of greenhouse heating, and an interesting paper on the shrubs and trees cultivated on the French shores of the Mediterranean Sea.

W. E. G.

"Vilmorin's Album of Forage Grasses."—Messrs. Vilmorin, Andrieux, & Co., Quai de la Mégisserie, Paris, have just issued this noble book, the publication of which is one of the most important of the many services they have rendered to horticulture. The work is designed to show all the forage Grasses printed in colours and shown life-size on large pages. With the aid of this work any one interested in meadow Grasses can at a glance identify the various species. At the end of the book there are a number of pages blank wherein may be placed either drawings or dried specimens of new or newly-employed forage Grasses.

Garden Pegs or Labels.—There is still a want waiting to be supplied in garden markers, and I should be glad if either Mr. Maw (who could do it most easily) or some other maker would supply it. Growers of herbaceous plants require a great many permanent markers. If there were pegs with numbers, say from one to fifty, in

bundles, they could be used without the trouble of writing, the numbers being recorded for identification in the garden catalogue Mr. Maw's markers might be cast with progressive numbers without interfering with their ordinary use, and would thus be doubly valuable.

—BROCKHURST.

THE TURNIP GALL WEEVIL.

(*CENTORHYNCHUS SULCICOLLIS*).

THE weevil which forms the subject of this article is fortunately not so injurious in its habits as those to which attention has already been called; still the injuries which it commits are very extensive, and in the event of the insect being very abundant some year, cultivators of Cabbages and Turnips might be seriously inconvenienced by their attacks; under any circumstances, however, this beetle must be classed amongst the garden destroyers. The grubs of this insect form the wart-like galls frequently found on the roots of Cabbages and Turnips, which vary in size from that of a large shot to a knob as large as the end of one's finger. In the larger warts several grubs may often be found, whilst the smaller ones contain only one. It is difficult to suggest any means of destroying this insect. If in great numbers it might be worth while to collect the perfect insect by picking them off the plants by hand

as soon as they make their appearance on them, and before they have laid their eggs. Partridges and, I have no doubt, rooks and other birds will kill numbers of the grubs in fields of Turnips, and probably various birds kill many in our gardens. The weevils are frequently found on flowers in hedges and waste places from the end of April to the beginning of September. When alarmed they immediately feign death, and contract their limbs and antennae, so that they do not in any way resemble a living insect. As soon as the roots of the young Turnips begin to swell, the females, with the assistance of their long beaks, pierce the skins of the roots and deposit an egg in each hole thus formed. The eggs soon hatch, and the grubs commence feeding on the root. The puncturing of which by the parent insect, perhaps accompanied by some irritant fluid, or the action of the grub in feeding, in some way which is not at present understood, causes the tissues of the root to form a gall over the grub, much in the same manner as Oak Apples, and galls are produced. The grubs continue living in the galls until they are fully grown, which probably

does not occupy more than a few weeks. They then eat their way out, and descending into the ground, become chrysalides, having previously formed cocoons round themselves. The time which the changes of this insect occupies is uncertain, as the grubs have been found in the galls as late as the beginning of spring. Probably there is more than one brood, the transformations of the first being (as is often the case) much quicker than the last, the grubs of which do not become chrysalides until the following spring. The beetle is about one-eighth of an inch long, and is broad in proportion to its length; it is black and glossy in colour, very sparingly covered with fine, white, depressed hairs. The head is produced into a long, slender, curved beak or snout, about the middle of which the antennae are placed; they consist of twelve joints, the four terminal ones forming a club, which is placed at an angle with the basal ones. The thorax is strongly punctured, much narrower in front, the sides somewhat hollowed where they converge with a broad groove down the middle. The wing cases have ten well defined, incised, longitudinal lines down each; legs tolerably long with thickish thighs. The grubs are about two-tenths of an inch long. When full grown they are fat and legless, white or flesh-coloured, with a yellowish head. They are usually in a somewhat curled-up position within the gall.

S. G. S.

THE FRUIT GARDEN.

THE CULTIVATION OF CRANBERRIES.

I OBSERVE IN THE GARDEN FOR NOV. 16 (p. 435) some rather elaborate directions for establishing Cranberry beds, including artificial irrigation. I can assure those who desire to cultivate that very excellent winter fruit that they may reach their end in a far more simple way, at all events in a healthy district, as this portion of the Weald is. I have had, for a good many years, two flourishing beds of the large-fruited Cranberry, which has gone on fruiting abundantly from December till the end of spring, and pushing its trailing shoots in every direction, with no other soil than the natural one, and no more irrigation than what the rainfall yields. One of these beds stands on a dry, sandy hill, while the other, at a short distance off, is more flat and moist, and I should imagine that the success of both would have been about equal had not the latter one been allowed to be too much overrun with Heather, Brambles, and other intruders; now that they are cleared this bed seems to be starting fair with the other one. I fancy the truth to be that where Heather is the weed of the soil the Cranberry will probably not refuse to grow. The Heather (*Calluna*) is always pushing out its growth among my Cranberries, and has to be kept back, while, on the other hand, the long shoots of the Cranberry are extending themselves among the masses of Heather and Heath which fringe one of the beds.

A. J. BERRSFORD-HOPE.

Bedgebury Park, Weald of Kent.

WINTER-DRESSING FRUIT TREES.

WHEREVER fruit trees are much subject to the attacks of aphides, scale, Moss, or Lichen, a suitable winter dressing will be beneficial. For the eradication of Moss, fresh lime is the best and cheapest material to apply; it may be dusted on when the branches are slightly damp, or it may be applied in a liquid form through the syringe or garden engine. In either case a fourth part of soot may be added to it. Soot in any shape is a capital stimulant for fruit trees, and might with advantage be much more extensively used than it is, either as a top-dressing to the roots or as an insecticide. When applied in a liquid form, it should be strained, just previous to being used, through a piece of canvas; otherwise the syringe or engine may be rendered unserviceable. For the destruction of scale and aphides, Gishurst Compound, in the proportion of 3 oz. to the gallon, may safely be used dissolved in soft water. The common and, as I think, the best plan is to thicken the liquid compound with lime and soot, and a couple of good handfuls of sulphur per gallon till it has the consistency of ordinary paint, and then put it on all the branches of the trees with a soft brush, rubbing it well in on the old wood, but passing over the young shoots with a lighter hand, so as not to disturb any of the buds, drawing the brush along in the direction of the buds only without any reverse action. It has been stated that to simply wash the branches of the trees with the liquid compound without any thickening ingredients would have the same cleansing effect. I have tried both ways, and the conclusion at which I have arrived is that the thicker mixture has a more lasting and beneficial effect than the thin one, and as one can be applied nearly as quickly as the other, and there is not much difference in the cost, I should recommend a continuance of the old system.

E. HODDAY.

SAUCERS FOR STRAWBERRIES.

THE great evil arising from the use of these is having them too large, whereby they hold as much water that the plants standing in are drowned, and the roots, therefore, instead of being healthy and active are just the reverse, as must, of necessity, be the case when the soil is always in a wet, sodden condition. During certain stages of their growth Strawberries will stand almost any amount of water, but, like most other moisture-loving plants, they only do really well when it passes freely off, and there can be no question that if they could only be kept uniformly wet enough by going over them oftener than time in most places will admit of, they would succeed better without saucers than with them. Whenever I use them, I always have such as are made for pots a size smaller than those in which we grow Strawberries, (6-in.) and then the pots do not quite reach the bottom of the saucer; most of the water in that way which they contain is drawn up by capillary attraction, and is all taken out

and made use of during the twenty-four hours. When this takes place I never consider that plants of this class receive any harm, as the supply which they get is not excessive and is perfectly natural, but when they have more than they can absorb, or make use of, the excess soon makes itself known in the shape of enfeebled health.

It will be found a good plan where saucers are larger than they should be, to nearly fill them with sandy shingle or broken-up horse manure mixed with leaf soil, or anything of that kind that will not get muddy through being so much saturated with water. By managing in this way, plants standing in large saucers are almost, if not quite as well circumstanced as those in others of smaller size, as so long as the earthenware of the pot remains in contact with the moist body of matter beneath, it will absorb water from it and give off part of it to the roots. The best place I ever had for pot Strawberries when being forced was along the wall of a house having a hip roof, and instead of this being finished flush on the inside, as is generally done, the roof was carried to the back, where the plate rested on $4\frac{1}{2}$ in. work, carried three courses high for that purpose. The wall being 14 in. thick, gave us a shelf about 8 in. wide, which was formed by a coat of cement on the bricks, and, by running a fillet of the same along the front, water always stood there, and, to prevent this running down and staining or disfiguring the wall in the house, or being too deep for the welfare of the plants, a few pieces of small gas pipe were let in to conduct it to the outside, so that it never stood beyond a certain level, however much might be given. Were I building pits or houses again, and could have my way, I should always finish them in the same manner, as shelves so formed are the very best positions for Beans, Strawberries, and many other things we have to grow and supply; besides which, there is much space gained and less timber required for wall plates, and there is, therefore, a great advantage in such an arrangement in many ways. Pots placed on a wood shelf suspended in the ordinary fashion are fully exposed to the desiccating influence of the sun, and with a constant play of air around them, there is always much difficulty in maintaining the soil within them in anything like an equable condition of moisture, and if this be not done, red spider is soon rife, and spreads with the greatest rapidity. With a wall forming a shady back ground, and a shallow sheet of water throwing off vapour under the foliage, these insects have no chance, and seldom put in an appearance, as they are mostly found only where plants from any cause are insufficiently fed.

S. D.

PINE HOUSES.

PERMIT me to say, in reply to Mr. Baines (p. 131), that I never stated that good, pure loam was unsuitable for Pines. I said Mr. Baines was wrong in saying fresh loam was "the only soil" suitable for them, and my reason for saying this was that I have seen Pines grown well in many varied composts, and have so grown them myself. As to Mr. Baines' advocacy of a lean-to structure in preference to the span-roofed form, I cannot do better than quote Mr. Baines himself in support of my opinions. IN THE GARDEN for January 1876, he writes as follows regarding plant and fruit houses:—"For plants of any description there is no form of house equal to a span-roofed one, placed, if possible, with the ends standing north and south. In this case the inmates have little disposition to become one-sided or drawn; on the contrary, they maintain their natural character, and possess a robustness of health only attainable when grown under the influence of a maximum amount of light. Further, I may add, in reference to this form of house, that there is nothing equal to it, either as regards the health of the plants to be grown therein, the strength of the structure, or the cost of construction. Under no conditions is it advisable to build lean-to houses, not even against existing garden walls that are no higher than the top of the roof lights, except for Vines, Peaches, or Cucumbers, that, from their nature, need roof-training and every ray of light that passes through the glass." I may add that I do not go quite thus far.

Wortley.

J. SIMPSON.

Forcing Early Strawberries in Pots.—Having now grown *Vicomtesse d'Éricart* & *Thury Strawberry* for the earliest forcing sort for several years, I find it by far the best which I have ever tried. The *Black Prince* will, perhaps, come in a week earlier in March, but it is subject to mildew, and does not set so freely as the *Éricart* & *Thury*, nor is it so finely flavoured. For other two successional early varieties, *President* and *Sir Joseph Paxton* do well with me; and last year the *Grosse Suprême*, which I can recommend as a good early forcing sort. The early forcing Strawberries are grown here in pits, where the shelves are near the glass. The shelves are of iron and are about 1 in. deep, so that when the sun begins to have some strength in March and April they are filled with weak liquid

manure at times. This keeps the roots of the Strawberry in the bottom of the pots well supplied with moisture, and causes the fruit to swell to a better size, than when the plants are grown in the usual way.—WILLIAM TILLERY, *Welbeck*.

GARDENING FOR THE WEEK.

Indoor Plant Department.

Potting.—The particular time for potting the principal portion of the occupants of plant stoves will depend upon the temperature kept up in them. Where the heat maintained through the winter months is consistent with the requirements of such species of plants as need the most warmth, they naturally begin to grow considerably earlier than where less heat is used, and, on this account, the general potting will need to be done sooner than where the temperature is lower and growth commences later. In all cases where plants have been cut back, and time allowed for their breaking into growth, previous to being partially shaken out and re-potted, it is not well to delay their removal until too much shoot development has taken place, as when that occurs the severe check given by the partial shaking away of the soil, and the unavoidable disturbance and destruction of the roots accompanying it has the effect of stopping many of the young growths; consequently, all that were cut in about the commencement of the year will by this time be in a condition for potting, first warming the material so as to make it fit to come in contact with the roots of plants grown in heat. Most hard-wooded stove subjects, from their naturally more rapid growth than that which takes place in the case of the generality of greenhouse plants of a like character, need a good deal more water, to meet which provision must be made by using sufficient sand in the soil to admit of the moisture passing freely off; decomposition of the fibrous matter contained in the potting material used for plants grown in stove heat is quicker than in the case of those in a lower temperature, and this tends to reduce the soil to an adhesive, sour condition, to avoid which it is well to use it in a rough, lumpy state, proportionate to the strength and size of the plants, and also the size of the pot in which each is placed. I have long been convinced that with very few exceptions the loose system of potting carried out in the cultivation of many plants in times past was a mistake, its direct tendency being to produce long, weak shoots much fewer in number than where in potting, the soil is compressed sufficiently to afford a more holding medium for the roots. Through being in this way alike in its effects, I have found it better to dispense with the use of leaf-mould in the case of all but a few of the quickest-growing, soft-wooded subjects, for though when used for plants of a harder, slower-growing character, it stimulates rapid leaf and shoot development, yet proportionately fewer flowers are produced. Most free-growing stove plants, too, especially those that are of a deciduous character, have a greater disposition to bloom when grown in loam alone than in any admixture of loam and peat.

Dicænas, Cyanophyllums, Sphærogynés, Crotons, Pandæbachias, and Paffenus.—Large plants of these that require it may now be taken out of the pots which they are in; a portion of the old soil should then be removed, fresh material added, and the plants returned to the same pots, or larger if needed. In the case of these the soil should also be rammed tolerably firm. When all plants that at present want potting are finished, those not yet started and intended to succeed the earliest, should at once be attended to, cutting back those that may require it, thoroughly moistening the soil of any that have been allowed to get dry, and daily syringing overhead and keeping them sufficiently warm to induce growth.

Plants Grown on Trellises.—It is nearly always desirable in the case of these to fix the trellis at the time of potting, keeping the existing branches well to the base, for if not properly furnished at the bottom early in the season it is difficult afterwards to cover it, and it should always be borne in mind that the trellis is merely a means for supporting plants, the natural habit of which is such that they cannot well be grown as pot specimens without it. The young-growing shoots should not, however, be kept continuously trained down with a view, as is sometimes supposed, of giving a tidy appearance, as in that case, instead of their extending freely, as they will when allowed to assume an erect position, there is a continual disposition to break out at the lower eyes, which crowds the specimen with a quantity of weak, useless shoots.

Temperature, &c.—The temperature may now be raised some 6° or 8° in the daytime. It is frequently urged that it is wrong in practice to start plants into growth until the spring is so far advanced

as to afford more daylight, but with the majority of plants that require a stove temperature if this course be followed the length of time which they can be had in flower is very much reduced, and in a thoroughly light, well-constructed stove, with the plants as they should be at this season, elevated with their heads near the glass, there will be no weak growth.

Achimenes.—It is now time to start a portion of these; if kept, as they winter best in the old soil, in a dry state and sufficiently warm, they should now be shaken out and placed in pans well drained and filled with loose, light soil. When they have made a little growth they may be transferred to the pots in which they are to flower without breakage of the young, newly-formed fibres, which would be done if material of a stronger character were used. It is well to keep some in a dormant condition until later on for blooming towards autumn.

Gloxinias.—More should now be started. In the case of small bulbs raised from leaf cuttings last year they may first be put in little pots and moved into larger ones when they have made some growth. Where raised from seed this should be sown, pressing the surface of the soil moderately firm and quite smooth, with just enough fine, sandy, sifted material to cover the seeds. Set the pots at the warmest end of the house until vegetation takes place, and then they should be kept close to the glass.

Marantas.—Large specimens of these are not so useful for general decorative purposes as smaller ones, and where plants exist that it is desirable to divide, this may be done at once. Marantas are often grown in a higher temperature than they absolutely require, the result of which is that if taken out of the stove, even for a short time, they flag. This is particularly the case when they are used for exhibition, a purpose for which they are totally unfit till the summer has become somewhat advanced, which gives time for their full development without being hurried. They will grow in either peat or loam.

Medinillas.—In a large stove few plants are more effective than these. Plants of them that have been kept somewhat dry at the root and comparatively cool through the winter should now be encouraged to flower; if they have been grown under conditions such as give the necessary solidity to the wood and leaves, they will bloom profusely, not only from the points of last summer's shoots, but likewise from the lower portion of the branches.

Gardenias.—These, where kept sufficiently warm, will now be beginning to flower; those brought on early are sometimes liable to drop their buds, the best preventive of which is to avoid the extremes of an over-dry or too moist condition of the roots, and not to keep them too moist overhead.

Nepenthes.—It is useless attempting to grow these unless they can have a brisk, moist heat. They need very little root room, and there should never be an attempt to reduce the soil from the balls which the roots have already occupied. It is now time to pot any that need it. The material in which they require to be grown ought to be nothing but the fibrous portion from the best Orchid peat mixed with a third or a fourth of chopped Sphagnum, some sand and pot shreds, or charcoal being added. The slightest disturbance of the roots is much more injurious to them than to almost any other plants with which I am acquainted.

Sarracénias.—An intermediate temperature is quite sufficient for these; in fact, they do no good at all if grown in too hot a place. It is essential that the roots be placed in new soil every year, and equally necessary is it that the potting be done at this time before growth commences. Material composed of about equal quantities of good fibrous Peat and chopped Sphagnum, with the addition of a good amount of pot shreds and some sand, will answer for them.

Forcing Pit.

There must be a continuous introduction into the forcing pit of the different subjects required to be brought on into flower for conservatory decoration, cut bloom, &c., regulating the quantity proportionate with the demand; more bulbs, such as *Hyacinths*, *Tulips*, *Narcissi*, *Lily of the Valley*, and *Scillas*, together with *Hoteia japonica*, *Rhododendrons*, *Kalmias*, *Lilacs*, *Andromedas*, double-flowering *Plums*, and *Deutzias*, should be brought in.

Solomon's Seal and *Dicentra spectabilis*.—These are most useful for supplying cut bloom through the spring, or for conservatory decoration; but to flower the *Dicentra* well, it must not be hurried, or placed whilst being brought into bloom where there is not plenty of light, as it draws up weakly.

Spirea palmata.—Beautiful as this plant is when grown out-of-doors, it is even of still more service cultivated in pots, but not submitted to too much heat, or the fine colour of its flowers will be absent

As a conservatory subject, mixed with the numbers of light-coloured blossoms that prevail at this time of the year, there are few plants that produce a more agreeable contrast.

Ferns.

The potting of these should, unless in exceptional cases, always be carried out just before the top growth begins to move; if later, the fronds next produced are almost certain to come more or less deformed. For Ferns a porous condition of the soil is an absolute necessity, but I have found that it is better to mix it with charcoal, potshreds, or broken coal cinders than to add to it very much sand. In the cultivation of Ferns, particularly those of large growth, with the exception of any that have creeping rhizomes, it is better to confine them to pots much smaller proportionately than the generality of other plants, as with the tree kinds especially there is ordinarily a disposition to outgrow the limits at command. This is the more advisable, as the requisite vigour can always be secured by the use of manure water.

Orchids.

Potting and Top-dressing.—It is now time to commence potting such of these as require it. A little observation as to the nature of the roots of the plants, clinging as they do to whatever substance with which they come in contact, at once shows that they should never be moved from the pots, baskets, or blocks which they occupy until there is an absolute necessity for it, as, with the greatest amount of care possible, they cannot be moved without considerable breakage, which correspondingly interferes not only with their blooming during the coming season, but also with the growth which they make; nevertheless, it does not do to let them remain in material that has become effete and too far decomposed, or in pots which they have outgrown; especially should this be avoided in the case of such kinds as *Cattleyas* and *Lælias*. Where the growths have so far extended that the roots, instead of being inside the pots, cling to the outside and have little or nothing to sustain them, the pseudo-bulbs formed under conditions of this sort will almost invariably be found deficient in size, and the leaves to have a sickly appearance. All reasonable care ought to be taken not to break the roots more than is unavoidable in removing them from the old pots, and also in placing the material about them in the new ones. From the nature of the roots of Orchids, it becomes apparent that nothing but the most enduring materials should be used for potting them, such as the best fibrous portion of peat, with clean sphagnum, and pot-shreds or charcoal; the two former in something like equal proportions. This compost will suit the majority of *Cattleyas*, *Lælias*, *Oncidiums*, *Epidendrums*, *Cypripediums*, *Angulosas*, *Brassavolas*, *Chysis*, *Ceologyne*s, *Dendrobiums*, *Lycastes*, *Huntleyas*, *Gongoras*, *Odontoglossums*, *Miltonias*, *Trichopilis*, *Stanhopeas*, and others of similar habit. Keep the plants sufficiently, but not too much, elevated in the pots, press the material sufficiently firm, and slightly moisten the surface, which should be left tolerably smooth and even. In all cases at once apply whatever sticks are necessary, to prevent the plants from shaking about when being moved, until the new roots have got sufficient hold to support them. *Aerides*, *Saccolabiums*, *Vandas*, the thick-rooted *Agrostoms*, *Renanthas*, and *Phalaenopsis*, are even still more impatient of their roots being disturbed than the foregoing. For these little beyond sphagnum is often used; press it moderately firm, and secure the plants with sticks and ties, as when grown in pots; those that are cultivated on blocks and in baskets fasten in like manner with wire or bast; I do not like more of the former being employed than can be avoided. The same applies to *Dendrobiums* and all similar subjects suspended in baskets. For *Sobralias*, *Phajus*, *Calanthes*, *Zygopetalums*, *Peristerias*, and *Ansellias*, some growers prefer loam, others peat; whichever is used it should be of the best description, and have sufficient crocks or broken charcoal, with a little sand intermixed. After potting, it is well to at once raise the temperature a few degrees, being careful not to give much water until the growth of the plants, accompanied by more warmth, makes its application necessary.—T. BAINES.

Flower Garden.

Outdoor operations in this department will have, for the most part, come to a standstill; but such is not the case indoors as propagation, seed sowing, potting off, &c., may now be proceeded with as fast as circumstances will allow, in order that the labour may be concentrated on outdoor work as soon as the weather becomes favourable. Most kinds of large-growing, fine-foliated plants may now be sown in heat in shallow boxes or pans, which should be filled within 1 in. of their rims with light, sandy soil; cover the seeds very thinly and the boxes or pans with glass till germination takes place, which will be in a few days if placed in a temperature of 60° or 70°. The following are amongst those which we have found most

useful, and all of them will make fine plants by May if sown as indicated:—*Azalea lophantha*, *Cannas*, *Ricinus*, *Solanums*, *Ferdinandias*, *Eucalypti*, *Wigandias*, and, of the smaller-growing kinds, the best are *Chamaejasme diacantha*, *C. Casabona*, *Centaureas*, *Amarantus*, *Perillas*, and *Salvia argentea*. With regard to the propagation of bedding plants a plan of the proposed planting should be sketched, and a computation made of the number and kinds of plants required for each bed or border. Without some such method the probabilities are that at planting time there will be an overplus of some kinds and a corresponding lack of others, which by timely forethought may be prevented. As summer bedding plants Abutilons have not yet gained that prominence which they are destined to do; of course some of the varieties are not suited to the work, as they grow so rampantly and fail to flower when planted out, but others, such as *Boule de Neige*, *Lemoinei*, *Reine d'Or*, and *Duo de Malakoff* flower in profusion, and either as single specimens to break the formality of even surfaces or as masses for centres of large beds they cannot be excelled, and being as easily propagated, grown, and wintered as the hardiest *Pelargoniums*—of which we have had a surfeit—they deserve to take the place of some of these. *Lantanas*, too, should be again brought to the front, and they will doubtless be so by all who had the good fortune to see the magnificent beds of them during the past summer in the Park Monceau and the Luxembourg Gardens at Paris; as seen growing there no *Pelargonium* could excel them, either for profusion of flower or brilliance. If a few stock plants were now introduced into heat they would produce abundance of cuttings in two or three weeks, and these would make good plants for putting out in May.—W. W.

Auriculas.—We have now surface dressed the pots, and find that a large portion of the leaves have suffered from the severe frost, which has reduced the crowns to a hard tuft of short, brittle foliage. Cleanliness is an important element in success; therefore, besides seeing that no aphides are left upon the leaves, the pots should be washed, as they get covered with green mould in the shady place in which the plants have been grown. When the surface soil has been removed a good opportunity to take off all offsets that are ready is afforded; these should be cleaned of superfluous leaves and then be inserted in soil composed of equal parts loam, leaf mould, and sand, using small pots. I have been more successful with offsets at this season than at any other. The pots may be placed in a cold frame near the glass. After the large plants were surface dressed they were placed in the frame again. There are a good many dead leaves round the crowns of the choice *Alpino* varieties planted out-of-doors; these should also be removed and some fine soil placed over the exposed stems.

Carnations and Picotees.—One of the principal growers of these, writing from Yorkshire, says that he had not seen his plants (that were potted in the autumn and placed in frames) for many weeks; the frost had been intense, but the glass was covered with snow, which is a first-rate protection for anything underneath. When the lights were removed the plants were found to be in perfect health. We remove the glass lights from our plants every day when it does not rain. Plants in beds or borders of the hardy varieties, including Cloves, require to be looked over and the soil made firm round their stems after every severe frost; even the labels are thrown out of the ground by the frost, and must be put right again during these operations. Any weeds to be met with should be removed. A surface dressing of fine, rotten stable manure is beneficial to plants in beds.

Dahlias.—If there be no convenience for cuttings of these except hot beds greater watchfulness will be necessary, as they are more liable to damp off in these than in heated pits. See that fresh cuttings are put in to replace those that have failed. Remove the rooted plants from amongst the unrooted cuttings, and place them in a compartment where more air can be admitted.

Hollyhocks.—The treatment for these is very much the same as that described above for Dahlias, but the plants are much more readily injured if they receive any check as regards growth. Remove the rooted plants from the frame, and place them in a cooler place near the glass. They must be potted into larger pots when they have made a little growth. If stinted for pot room or irregularly supplied with water, they will start into premature bloom.

Pansies and Pinks in Beds.—Our plants of these were put out rather late, and they certainly do not look well; the Pansies have suffered most severely from the frosts, and the Pinks have not escaped. Our collections comprise the choicest named sorts, and many varieties that have the best blooms are the most tender, and if extraordinary care be not taken with them, they will disappear from the collection. Some of the plants were thrown quite out of the ground by the frost, and at least a third of the labels were upset; the latter have been replaced, and the plants made firm, and blank spaces filled

up with others. The frost seems to have been too much for slugs, of which there is no trace on the beds.

Phloxes, Delphiniums, Pyrethrums, &c.—These seem to be safe where they have been allowed to remain in the beds where they flowered the previous season; had they been taken up and potted, as is sometimes done, in the autumn, some, doubtless, would have been killed. As it is a few of the Phloxes that were exposed without any mulching seem to have been injured if not killed. If the plants are not to be lifted and divided, the surface of the beds should be mulched with rotten manure and good loam in equal proportions, to the depth of 2 in.

Polyanthuses.—I have not yet found it necessary to surface-dress these. The plants were grown in the open ground until September or October, and therefore they do not exhaust the soil in the pots to a great extent from that time until now. I find green fly to be a troublesome pest at all seasons, and it must be destroyed in order to give the plants a chance. It is only the very choicest named varieties that are grown in pots, the others make a fine display in beds or borders. It is best to replant annually, or if this has not been done, the beds must be surface-dressed with rich soil.

Ranunculuses.—Few people now grow these, and fewer still possess complete collections of them, a circumstance to be regretted, as a place might readily be found for them in every garden specially devoted to spring flowers. The tubers should be planted as soon as the ground is in good condition to receive them; and they like a deep, rich, open soil. Plant them in rows 1½ in. apart, and the crowns should be 1 in. below the surface of the ground, with a little sand over and under them.—J. DOUGLAS.

Indoor Fruit Department.

Pines.—These are showing the effects of the protracted frost most plainly; hard frosts, dark days, and the impossibility of giving air, are inducing a lanky growth, which, under the circumstances, is quite unavoidable; therefore, use no more fire heat than is absolutely necessary till the frost disappears. An over-moist atmosphere during such weather is also detrimental, because no air can be given to keep the same in motion, and the plants are therefore compelled to absorb it whether they require it or not. It will thus be seen how difficult it is, and what care is required to hit the happy medium in order to keep the plants in sturdy condition. Watering also requires close attention, as many Queens will now be throwing up their flower stems, and these, if once allowed to get thoroughly dry, will either have irregularly-swelled tips, or fine shows produce but poor fruit. Especially examine those in close contact with the pipes, for with such constant and hard firing, they will require water twice for the others once. Succession plants potted early in autumn will be getting pot bound, and should have a shift into fruiting pots as soon as convenient, otherwise the plants will fruit prematurely, more especially if they have been allowed to get dry. Suckers from the smooth Cayenne, and other winter-fruited kinds, should now be potted in 6-in. pots, and plunged in a bottom heat of 85°. As a rule, if the soil be moderately moist at potting time, no water is necessary till root action has commenced, but the soil should never be allowed to get dust dry. The smooth Cayenne produces but few suckers whilst the plant is fruiting, but it throws them out most freely from the old stools—i.e., if the latter be shaken out, the older roots cut off, together with the foliage, and the stems potted in 8-in. pots, and plunged in a bottom heat of 90° or 95°. The same treatment is applicable to any other variety where stock is required.

Vines.—I happen to be one of the very few who do not believe either in the utility or profitableness of pot Vine culture, but this season, I am willing to admit, that the advocates of the system have the best of the argument, for forcing so far has been up-hill work, and much injury is sure to accrue to permanent Vines, by—as it were—forcing frost, time, and in the face of such fearful odds as continued frost, keen easterly winds, and leaden skies, for I verily believe there has not been six hours' sunshine since the beginning of the new year. The Vines sadly want sunshine, for the shoots are near skin to straw, both in size and colour. Now that we may fairly expect a change, diligence as regards ventilation when the sun shows itself will soon effect a change for the better, but guard against cold draughts. Disbudding should be partially done as soon as the Vines are well broken, that is, the weakest duplicates should be taken off, and as soon as the branches can be distinguished they may be finally disbudded, leaving those with the most prominent shows; stop the shoots at one, two, or three points beyond the bunch, according to the space there is available for the full development of the foliage. Many growers have a disposition to stop the laterals too persistently, and, as we believe, suffer for their pains proportionately, especially when such stopping or pinching is done in the earlier stages of growth, before the roots have got vigorously at work.

This untimely pinching, together with high night temperature, if the weather be ever so severe, soon tells seriously on the Vines, either by the production of long tendril-like banches, which never finish off or look well, or else by shanking just at the time when one thought they were all right. Inside borders, during the time when the fruit is ripe, are apt to get very dry, and several waterings are necessary, ere the entire mass of soil gets soaked throughout, which is, however, necessary to obtain the best results; therefore, if the drainage be ample do not be afraid to overdo it in this respect; and if the water can be used at a temperature of 70° or 80° all the better; at any rate, the chill should be taken off at whatever stage of growth the Vines may be in. Vine eyes may now be put in—single buds with the under part of the wood cut off—and planted firmly in light fibrous loam; the pots should then be plunged in a bottom heat of 80° till roots are formed, after which they should be grown without bottom-heat in a moist temperature of 65°. Any Grapes still hanging on the Vines will require almost daily attention, in order to remove any decaying berries, and the air will have to be kept buoyant by the application of slight fires and ventilation. Cut them with a good piece of wood attached to each bunch, and place them in bottles of water in any dry room from which frost can be excluded. The Vines can then have the needful rest, an imperative requirement as regards success.

Peaches.—Owing to there not being a gleam of sunshine, artificial fertilisation must be practised as the blossoms expand; shaking the trellis will help to disperse the pollen, but better do it effectively by using a camel-hair pencil, going over the blossoms singly; keep the air dry but not arid, and the maximum temperature, without sunshine, should not exceed 60° with a maximum by night of 50°. Trees that have set their fruit may be partially disbudded, sparingly at first, in order that no check may be given. It is better to go over them half-a-dozen times, at intervals of a couple of days, and remove a few buds each time, taking care to leave a good one at the base and point of each fruit-bearing shoot, than to disbud all at once. Do not be in a hurry to tie them down to the trellis; none of them need be so fastened till all are finally thinned. As soon as the fruit is set, the syringe may again be brought into use, but till the weather is warmer and brighter, do not use it too freely. The borders may now require another watering which should be at least of the same temperature as that of the house. At the present stage a sudden chill, either from the application of cold water to the roots or draughty ventilation, would cause the fruit to drop. In succession houses, previous to the expansion of the blossoms, fumigate for two or three nights in succession, in order to insure freedom from fly whilst the trees are flowering. The above practice has now for some years kept our trees perfectly clean at this most critical time, when, if some such precautionary measure had not been taken, the worst consequences might have ensued through the attacks of green or black fly. The pruning of late houses should be no longer deferred, after which every scrap of wood, glass, floor, and walls, should be cleansed, as a preventive against insect pests. If winter dressing and cleansing be not attended to, summer troubles may be expected in the shape of red spider, thrips, mildew, and the like. Better, therefore, save both time, vexation, and the health of the trees, by anticipating such evils. The present winter has put many operations out of joint, and, amongst them, fruit tree planting, which ought not now to be longer delayed, more particularly indoor fruits; take, therefore, the first chance of accomplishing this. When done without wanton mutilation of the roots, Peaches and Nectarines bear this late removal better than most trees.

Strawberries.—Winter effects are observable at every turn, for Strawberries have made less progress during the last month than ever was known before, but surely a change is at hand; till then force very gently. Continue to fertilise the flowers as they open; keep the atmosphere on the side of dryness, but take care the plants do not get dry at the root, or they are certain to go blind, no matter whether they are fertilised or not. So long as the intense cold lasts keep the reserve stock in cold pits, dry and protected from frost, which cracks the pots even if it does no injury to the plants, as some think, an opinion which I am inclined to dispute.

Melons.—These may now be planted out if the plants are strong and the roots are lining the sides of the pots; otherwise nothing will be gained by planting so long as this sunless weather continues. A restricted root-space is necessary to fruitfulness and early maturity. A bed 18 in. to 20 in. wide is ample, including drainage of about the same depth. A bottom heat of 75° is necessary, and if a moist one all the better, as, from the vapour-moisture thus communicated to the soil, less surface watering is necessary. Heavy waterings are soon resented, either by the entire collapse of the plants by damping off, or else by an over luxuriant growth, which never proves fruitful. Earth up the seedlings last sown, and, to prevent a spindly growth, keep them as near the glass as possible.—W.W.

THE KITCHEN GARDEN.

NEW POTATOES FROM OLD TUBERS.

Mr. GILBERT, of Burghley, practices a system of growing new Potatoes which may be of interest to some of your readers. In July, seed Potatoes or "sets" are selected from the out-door crops, and these are exposed to the light on shelves in a cool, airy place where they are not subjected to any excitement conducive to growth. In this way they are kept for at least twelve months, when they are planted loosely in shallow boxes of leaf mould, and are afterwards placed in a dark, heated Mushroom house or other heated structure, where they soon commence to form young tubers without attempting to produce leafy shoots. I saw some young Potatoes thus produced on December 15, 1878, and their quality was excellent. These had been obtained from "sets" saved in July, 1876, and kept from making any leaf growth until September, 1877, when they were planted and otherwise treated as above described. Each old "set" bore from one to three Potatoes fit for the table. One advantage of this system is that it may be practised by amateurs readily, since a warm cellar or a cupboard near the kitchen fire would afford sufficient heat to start the old tubers. The annexed illustration, taken from one of Mr. Gilbert's crop, is an exact copy of an old tuber which has produced four young ones. Not the least interesting phase of this plan of culture is the fact that new growths or tissues are formed without the direct leaf action, which is generally considered essential to such a process. B.



New Potatoes from Old Tubers.

Trebons Onion.—We see in *THE GARDEN* (p. 112) that this Onion is supposed to be of French origin, a statement which induces us to observe that this variety was found some twenty-five years ago in a small place on the Pyrenees called Trébons, near Luchon (Garonne), whence we got some seed for trial, and, as it has been found to be a variety of great merit, it appeared soon after in our catalogues. Although it is a very poor seeder we have, on account of its excellent qualities, been offering it in our lists since that time. If we remember rightly, it was awarded a first-class certificate at Chiswick some time ago.—VIL-MORIN, ANDRIEUX, & Co., Paris.

SEEDS AND SEED-GROWING.

It is scarcely time yet (February) for getting in the general rack of garden seeds, though in dry warm soil many kinds may be sown, at least by the end of the month, with great propriety. Now is the time to calculate and procure the quantities to be sown. Indeed, this should be seen to before the soil is prepared, so that ground intended for the various crops may be properly treated. In giving directions for choosing seeds, the general rule is to say how much of this, that, and the other thing will be required for a quarter of an acre, half an acre, and so on. Such advice only serves to puzzle. The fact is, no two individuals' wants are the same, and hence a selection of seeds which might fit one person very well would be of little use for another. What I propose is, to give as near the amount of space required by a given quantity of seed, and by this means each person will be enabled to calculate to a nicety the seed required for his own individual wants.

Beet—1 oz. will sow a row 50 ft. long.

Broad Beans—1 lb. will sow a row 60 ft. long.

French Beans— $\frac{1}{2}$ lb. will sow 60 ft.

Carrots—1 oz. will sow 130 ft.

Cress—1 oz. will sow 20 ft. of a row 4 in. broad.

Leeks—1 oz. will sow a bed 5 ft. by 5 ft.

Lettuce— $\frac{1}{2}$ oz. will sow 50 ft.

Mustard—Same as Cress.

Onion—1 oz. will sow 40 ft.

Parsley—1 oz. will sow 50 ft.

Peas—1 lb. will sow 30 ft. of a drill 5 in. broad, of the small, and 36 ft. of the large sorts.

Parsnips—1 oz. will sow 100 ft.

Potatoes—1 peck will plant 100 ft. if the seed is good, and cut to 2 eyes to a set only.

Radish—1 oz. will sow 20 ft.

Spinach—1 oz. will sow 60 ft.

Turnip—1 oz. will sow 100 ft.

Cabbage, Cauliflowers, Savoy, and all the Brassicas should be got in packets, as a very small quantity of seed will raise enough for most gardens cultivated by amateurs; indeed, it is advisable to get the plants from the nursery or from some obliging friend, and so save a great amount of worry.

In some collections of seeds offered by enterprising seedsmen I have sometimes seen 3 oz. of Cabbage included for gardens of $\frac{1}{4}$ of an acre! Why, it is more than enough to raise plants for the whole ground; of Celery and all other vegetables not included above a moderate packet is sufficient. A mere pinch of Celery will raise hundreds of plants.

Concerning annual flower seeds, some of the best got-up seedsmen's catalogues afford a good deal of information, and to these I must refer the amateur in the meantime, until I treat of them in a chapter on flower gardening.

KINDS TO SOW.—It is not enough for the inexperienced to know the proper quantity of seed required to sow a given space, it is of greater importance to know what kinds to sow. The kinds named below have been fully proved by the writer of this, and he can therefore recommend them. Almost every variety recommended has been well proved, and I have carefully avoided anything savouring of novelty which has not been found equal or superior to older varieties. The inexperienced should not be led astray by the glowing accounts of new introductions, as a great percentage of really new vegetables are inferior to well-known kinds, and the really good are sometimes nothing more than old kinds renamed. At the same time

really meritorious novelties are occasionally introduced. In this selection I range the names according to their earliness.

BEET.—Dell's Dark Red, Nutting's Selected, and, for extremely thin poor soils, Egyptian Turnip, rooted.

BROAD BEANS.—Early Mazarin, Seville Longpod, and Broad Windsor.

FRENCH BEANS.—Negro Longpod, and Canadian Wonder.

BROCCOLI.—All depends on the strain; Greens or Borecole, ditto.

BROCCOLI.—Veitch's Autumn, Snow's Winter White, Purple Sprouting, White Sprouting, Leamington, Eleton's Mammoth, and Dilcock's Bride.

CAULIFLOWERS.—Early London, Dwarf Mammoth, Walcheren, and Veitch's Autumn.

CARROTS.—Sutton's Champion Short Horn, James' Intermediate, and Altringham; the Short Horn for earliest, and the Intermediate for shallow soils.

CABBAGES.—Little Pixie, small, but of the finest quality; and if planted close, will yield more for the table than the large-growing kinds, many of which we consider unfit for the table at all. Dwarf York, fine for sowing in April to keep up an autumn supply; sown at the end of July, and planted out in September, it is fit for use in April and May. The same may be said of Little Pixie. Enfield Market and Sugar-loaf are good larger sorts. The Drumhead kinds are unfit for a small garden, the dwarf being of better quality than the giant.

SAVOYS.—Sutton's Tom Thumb, very small, but of super-excellent quality, and if planted 1 ft. apart each way, will yield almost as

much as the larger kinds. Early Dwarf Ulm is a good early sort, and Drumhead, a larger and later one.

CELERY.—Sandringham and Cole's Crystal among whites; Sutton's Sulham prize of pink varieties; and William's Matchless among reds.

VEGETABLE MARROWS.—Moore's Cream and Hibberd's Prolific.

LEEEKS.—Aytton Castle Giant for quality and size, and Musselburgh for hardness.

LETTUCES.—Cos varieties—London White and Paris White, Champion Brown.

CABBAGES.—Varieties—All the Year Round and Neapolitan.

ONIONS.—The Queen (very early), Danvers' Yellow, Blood Red, James' Keeping, for spring sowing; and Globe, Flat Tripoli, and Giant Rocca for sowing early in August.

PEAS.—Ringleader, Kentish Invicta, William the First, and Sutton's Emerald Gem for first sowings; Dickson's Favourite, Daniel O'Rourke, and Fabus Market Favourite for second; best of all, McLean's Wonderful, Champion of England (very tall) for third sowing; Veitch's Perfection, Ne Plus Ultra, Lynn's Marrow, William's Emperor of the Marrows, Hair's Dwarf Mammoth, and McLean's Premier for last sowings.

POTATOES.—Veitch's Early Ashleaf, Wonderful Red, Alpha, Early Rose, Snowflake, Dalmahoy, Walker's Early Regent, Paterson's Victoria, Sutton's Magnum Bonum. I strongly recommend beginners to fight shy of the more famous show kinds, as not a few are of very inferior quality, such, for instance, as the Old Handsworth's Early, very wrongly re-christened Porter's Excelsior. This is an inferior Potato to eat, although of fine shape.

RADISHES.—We advise amateurs to get their seed in mixed packets.

PARSNIPS.—Student, Hollow Crowned.

SPINACH.—Round, for sowing in spring and summer; Prickly, for sowing about the middle of August. New Zealand requires to be raised under glass, and transplanted early in June.

TOMATOES.—The Conqueror and Hathaway's Excelsior. They require rearing under glass, and after danger from frost is past, to be put in any vacant space of a warm wall. In cold districts they require to be under glass.

TURNIPS.—Early Dutch White, Early White Strap Leaf, Robertson's Golden Ball, Chirk Castle, Black Stone, and Laing's Swedish, for keeping over winter.

These varieties have always given satisfaction. It would have been very easy to have doubled or even trebled the list. Few amateurs require a long list, and more experienced growers will be able to add to this list for themselves. Sometimes a given variety of a vegetable will do well in one district and not in another, such as Peas and Potatoes. I would warn amateurs against being led astray by large vegetables—that is, kinds which grow large naturally, as the more rapidly the majority of vegetables are grown the tenderer they are. Half-starved garden produce is neither palatable nor wholesome; nor, as a rule, are giant varieties. Size and coarseness almost invariably go hand in hand; and as a matter of fact, it is not often that great, coarse-growing vegetables yield the greatest amount of real useful produce. For instance, the ground occupied with a coarse Drumhead Cabbage would produce three or four little Pixies, the united weight of which would equal the coarse one, and which would give the greatest satisfaction on account of their quality. It is the same with Potatoes, although there are more exceptions among them than among any other vegetables. Among Carrots, good strains of Early Horn are finer than any other kind, and the yield is not very much less than the coarsest kinds; indeed, is sometimes greater. It would be well if your readers who are acquainted with specially meritorious varieties were to add them to the above. The kinds named I can confidently rely on myself, but it is possible that some of them do not succeed as well under other circumstances; and any information will prove of the greatest value, not to amateurs only, but to many others.—"The Gardener."

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Veitch's Self-protecting Broccoli.—I cut good dishes of this on the 16th, 17th, and 18th of January, a circumstance at which I was surprised after experiencing 30° of frost. It was planted near a south wall, and received no protection whatever. Indeed, as its name implies, it is thoroughly self-protecting, and is, without doubt, one of our very best Broccoli. —H. PARR, Harrow Weald Park.

Effects of the Late Frost on the Cabbage Tribe.—It is curious to note the varying effects which the frost has had on vegetables which are usually considered to be about the same as regards hardness, but which is not really the case. Savoy is not injured in the least, whilst young plantations of Endel Market

Cabbage are very badly so, and the old Cabbage stems, from which bushels of sprouts were expected, are completely killed. Purple and white sprouting Broccoli are as fresh as ever, and so are Brussels Sprouts and Cottagers' Kale, but the Green Curled Kale is much injured, and many will die outright. Veitch's new Protecting Broccoli is also much damaged, and so is Snow's and Osborn's, but Early Pensance, Sutton's Perfection, and Cooling's Matchless are unscathed. All the late kinds of Broccoli are comparatively uninjured. —W. W. H.

Climax Potato.—Having been informed last season that Climax was a remarkably good Potato, I desired my gardener to plant it largely, and the result is most disappointing, considering that I paid 7s. 6d. per bushel for seed. The crop was a heavy one, but the produce is really hardly fit to eat, being disagreeably sweet and watery. I should add the tubers were planted on a warm, dry border, with a gravelly subsoil, and that Rivers' Ashleaf, which we used up to Christmas and came off the same soil, was excellent. The tubers of Climax are so bad that no one in the house can eat them, and I purpose selling them for what they will fetch. My gardener attributes the result entirely to the late wet season. Is that so? Will some of your correspondents kindly give me the names of two or three sorts well adapted for all seasons. We find Paterson's Victoria very good, but substituted Climax for it last year. —J. D. H.

Early Peas for Transplanting.—Ever since the plan of sowing early Peas under glass for transplanting to the open ground has been practised the use of strips of turf for the purpose has been known and advocated. The plan has some obvious advantages over pans, pots, or even boxes of a certain character, but its weak feature consists in the fact that either the turf must be placed on some hard substance, into which the young roots cannot enter, and thus promote weakness and degeneracy, or, if placed on some soft material, such as soil or manure, the young roots soon penetrate it freely, and the disturbance caused to these when transplanted is productive of much mischief. There is yet another danger when strips of turf are used; the turf may contain wireworm or other dangerous insects, and roots of the young plants might be eaten. If the plants be turned out of pots, pans, or ordinary boxes, then the young roots must be seriously disturbed, and we all know that when plants are so moved from under glass to the open ground, say in the month of March, that it takes some time to get them established and ready to take advantage of the shift to make the required progress. One plan that I have known from experience to answer famously is having a lot of narrow boxes of, say, 2 ft. in length, 4 in. deep, 2½ in. wide on the top, and 3 in. wide at the bottom, inside measure; these are made with movable bottoms, kept in their place by means of hooks and eyes, two on either side; these are filled with soil, the Peas sown, and then placed together in a frame, where they can remain until the plants are 4 in. in height and ready for transplanting. When this is done deep drills are drawn, the boxes are inverted, the bottoms taken off, and the frame containing the Pea plants placed lengthways in the drill; owing to the shape of the box it will lift freely from the plants without disturbing the roots, and these are found to have formed a mass ready at once to take hold of the new soil. Twenty of these boxes may be made in a short time, and to secure the correct form it is but necessary to cut the ends of the right size—2½ in. by 3 in.—and all the rest will follow. These boxes might be used with advantage in the autumn for striking cuttings of bedding plants. —A. D.

Potatoes during Frost.—In large vaults Potatoes are exposed to but a minimum of danger; it is when they are stored in ordinary sheds, fruit-rooms, stables, and similar places that danger is to be apprehended, and where all possible precautions are necessary. Where there is a bulk of one sort the safest place for it is on the floor, and it should be kept in bounds by means of stout boards. For this the covering should in the first place be cloths, sacks, or any close-lying and air-excluding material, and upon this a thick covering of straw, the thickest portion being upon the crown of the heap, where a little moisture is likely to accumulate. If the bulk be dry, it is a great point in favour of the safety of the tubers. Smaller quantities may be well secured in bins, boxes, or tubs, but hampers should be avoided, and if some be stored on shelves, it is necessary to be as particular as to the nature of the floor on which they lie, as upon the thickness of the covering. If in boxes or tubs, these should be placed close together, and should have some sacks or similar covering over them, and then a thick covering of straw. In all cases it is well to put some boards, slabs, or anything at hand upon the straw to make it lie close, and thus exclude as much air as possible. When a thaw takes place, three or four days at least should elapse ere the covering is removed, as should any little touch of frost have got admission, it will be productive of less damage if it be allowed to escape gradually. —A. D.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

FEBRUARY 11.

On this occasion the Fruit and Floral Committees met in the large conservatory, as the annual general meeting, which took place on the same day, was being held in the council-room.

First-class Certificates were awarded as follows—

Rubus roeseflorus (Green).—A Bramble with large, double, white flowers, well adapted for pot culture. The plants from which the blooms shown were cut had been in flower ever since December last.

Cypbophentia macrocarpa (Bull).—A graceful Palm with arching, feather-shaped leaves of a brilliant bronze colour when in a young state, changing to shining green.

Medals:

A small gold Banksian was awarded to Mr. Bull for a collection of new and rare plants, Orchids, &c.

A silver Banksian to Mr. B. S. Williams for a group of Orchids, Amaryllis, Primulas, &c.

Silver Floras to Messrs. Veitch & Sons and Messrs. Osborn & Sons for collections of forced plants, &c.

Miscellaneous Subjects.—Messrs. Veitch showed an attractive group of plants, consisting of finely-flowered little bushes of *Lilac* Charles X., *Rhododendron caucasicum*, Ghent Azaleas, &c.; these were backed up by graceful Palms and edged with a bank of *Cyclamen* and little-flowered kinds of *Lily* of the Valley, *Vermilion Brilliant* and *Tournesol Tulips*. A panful of finely-flowered plants of *Staphylea colchica* attracted much attention. Mr. B. S. Williams contributed a group of Orchids and a large collection of plants of *Primula sinensis* fimbriata coccinea and its white variety, the flowers of which are fine in form and larger in size probably than those of any *Primula* which has been before exhibited, and they are fine in colour. Among the Orchids were *Dendrobium Wardianum*, a plant of *Cyclopogon cristata* bearing upwards of 200 flowers, *Sophronitis grandiflora*, *Odontoglossum Rossi majus*, and others; also several seedling Amaryllises of a meritorious character. The same exhibitor also furnished a new Fern named *Asplenium Nova-Caledonia*, the pinnae of which are of a bronze-green colour; it is well adapted either for pots or pans. Mr. W. Bull contributed some choice plants, among which were noticeable *Sarracenia Drummondii* alba, *Dendrobium Fitchianum*, and *Eucharis candida*; also finely-flowered examples of *Oncidium macranthum hastiferum*, *Leelia anceps*, *Odontoglossum*, and *Pl. gloriosum*. Associated with these were well-grown plants of the narrow-leaved *Dracena vivipara* and *D. triumphans*; also *D. Goldiana*, choice Palms and Cycads, and finely-grown plants of *Cureligno recurva variegata*. Mr. Wills, of South Kensington, showed an attractive group of plants, consisting of stalwart Palms, fine-leaved *Dracenas*, and Indian Azaleas, overtopping a thicket consisting of the snowy white *Cyclopogon cristata*, *Odontoglossum Alexandræ*, *Lily of the Valley*, &c., interspersed with Maiden-hair Ferns and Club Mosses. Mr. Farr, Harrow Weald Park, sent cut blooms of *Poinsettia*, remarkable specimens of good culture, being very large and of the most brilliant colours; a vote of thanks was awarded for them. The same exhibitor also contributed cut sprays of *Begonia glaucifolia*, which is grown successfully at Harrow Weald in baskets. Mr. George, Putney Heath, furnished blooms of *Abutilons* to show their value in a cut state in winter. A fine collection of flowers of seedling *Abutilons* was also contributed by Mr. Parr. A plant of *Abutilon igneum* was shown by Mr. B. S. Williams. A large collection of Chinese *Primroses* was exhibited from the Society's gardens at Chiswick; they were well varied, both in colour and habit, and some of the old as well as modern strains were represented. Finely-grown examples of the old double *Primula* were also shown. Mr. Green, gardener to Sir G. Macleay, Randell Court, exhibited blooms of *Sparmannia africana* and *Dahlia Maximiliana*. Mr. Cannell, Swanley, was awarded a vote of thanks for a stand of cut blooms of zonal *Pelargoniums*, all unusually bright in colour. Mr. Rann, gardener to J. Warren, Esq., Handcross Park, Crawley, showed fine varieties of *Phloxopsis grandiflora* and *Odontoglossum Rossi majus*. Messrs. Veitch contributed a hybrid *Dendrobium* named *Endochair*, the result of a cross between *D. japonicum* and *D. heterocarpum*; also a flesh-coloured Chinese *Primula* named *Peach-blossom*. Mr. Buchan, Wilton House, Southampton, contributed a plant of *Oncidium superbiens* bearing a long twining flower spike beset with rich chocolate-coloured blossoms.

Fruit.—Mr. Haycock, gardener to R. Leigh, Esq., Barham Court, Maidstone, contributed a magnificent collection of Apples and Pears which attracted much attention. Among Apples were especially noticeable handsome, plump, and well-coloured examples of *Reinette du Canada*, *Melon Apple*, *Forge Apple*, *Reinette de Caux*, *Belle Dubois*, *Cox's Pomona*, *Beauty of Kent*, *Lincoln Pippin*, *Lord Burgley*, *White Calville*, and *Gooseberry Pippin*. Of Pears the best were *Passé Crassane*, *Broompark*, *Josephine de Malines*, and *Duchess de Bordeaux*. A good collection of Apples also came from Mr. Rivers, Sawbridgeworth, among which were *Annie Elizabeth*, *Winter Hawthornden*, *Norfolk Bearer*, and *Norman Greengate*.

Anniversary Meeting.—This was held on Tuesday last at South Kensington, Lord Abercrombie in the chair. The report of the Council was unanimously adopted. The agreement between the Royal Commissioners and the society for the occupation of the South Kensington Gardens terminated at Christmas last. By this agreement the Commissioners waived

re-entry till 1893, provided the society could, between 1875 and 1878, raise its annual income from subscriptions to £10,000. The efforts to fulfil this condition have failed. No intimation has yet been received from the Commissioners that any substantial alteration in the occupation of the gardens is at present intended, and the Council hope arrangements may be made by which the connexion of the society with the gardens, in all those respects in which it has been beneficial to the best interests of the society, may be maintained. The Council is convinced that the Commissioners, in the discharge of their trust as managers of the estate, will adopt no measure without giving the utmost consideration to the fair claims of the society and its position as a scientific association.

ANSWERS TO CORRESPONDENTS.

Peach-house Pathways.—"Welshman" (p. 132) will find a wooden trellis pathway the most useful and also cheapest. The trellis should be made in lengths not longer than 6 ft., as they are then easily movable for the purpose of cleaning, top-dressing the border, &c.; watering, of course, can be done without removal. The recommendation of the above kind of pathway is on the supposition that the entire floor of the house is required or intended for the border. If, however, there is room for the border apart from encroaching on the intended pathway, then either paving tiles or York flag-stones would make the most lasting and neatest floor.—W. W. H.

—If "Welshman's" Peach roots are in an inside border, the best pathway he can have is a trellis one, as that is always comfortable and dry to walk upon, and does not prevent light and air from reaching the soil, which anything in the way of flooring tiles or cement would do, and, unless rounded, with due provision made for draining off the water, would often be sloppy and unpleasant; besides which, there is the labour and trouble of scrubbing and keeping such a length clean, whereas with a trellis the traffic and an occasional sprinkle with the watering-pot remove what dirt or deposit there may be on it. Strips of Elm about 2½ in. wide and ½ in. thick nailed on to Oak cross-pieces are the most lasting, but good deal with such the sharp edges taken off, wears very well and is lighter; if tarred on the under side, and painted with two coats of lead-coloured paint on the top, its appearance will be improved and the wood will be rendered more durable by keeping the wet out. In making the trellis, which should be from 2 ft. to 2½ ft. with the strips of wood should not be nailed more than 1 in. or so apart.—S. D.

Chinese Primulas.—My Primulas are damping off at the base of the stem. They were particularly fine plants, strong and healthy, and were watered most carefully. On examining those affected I find quantities of minute white insects in the decayed part as well as under the earth. I have used lime and sulphur, but with little effect.—K. T. [To the insects to which you allude must not doubt be attributed the cause of the plants dying off. They are not unfrequently found at the roots of Primulas and other plants, and are doubtless brought in with the soil. The only remedy, or rather preventive is to use soil in which you are satisfied they do not exist. There is little chance, we fear, of saving your plants this season.—S.]

Early Peaches and Nectarines.—Is it necessary to artificially fertilise these in order to secure a crop?—W. J. [All that is absolutely necessary is to admit plenty of air both at top and bottom of the house on all favourable occasions, and to give the trees or trellis a sharp tap now and then when the blossoms are fully expanded, especially during sunshine.—S.]

Names of Plants.—F. W. H.—Your Heath is *Erica hymalis*; it should be cut down next month below the bottom flowers, and the side shoots should be stopped. Keep the plants of it a little close until the eyes begin to swell, then repot.—G.

Questions.

Orange Trees.—I have a favourite Orange tree in my small greenhouse about fourteen years' old in a 10-in. pot. It drops its leaves sadly, leaving only the stems of the leaves on the branches; and yet it is showing its buds for bloom. What can I do to get it into a healthy state? I do not see any scale or blight upon it.—WETTEDEN.

Malformed Orange.—I send you an Orange with a piece of rind growing inside, beginning from the centre of the fruit and extending nearly to the outer rind, forming the side covering of one of the segments into which an Orange may be divided. It is in appearance exactly like the outer rind, both in colour and substance, except that it is a little smoother and finer, but the difference is so slight as only to appear on close examination, and is not more than would be accounted for by the circumstance of its being protected from all exposure. You will see that there is a segment taken from the opposite side to that in which this malformation found, otherwise the Orange is perfect. I shall be glad to learn if, amongst your correspondents, any one has observed a similar growth either in the Orange or any other fruit.—T. BIKERT, Weston-super-Mare.

Broken Mercury in Thermometers.—I received a self-registering mercurial thermometer, maximum and minimum, a few days ago and found the mercury disarranged; it seems to be in little pieces. What shall I do to put it right?—SUBSCRIBER.

Perpetual or Tree Carnations.—Will Mr. Douglas or some other good Carnation grower kindly name six really good, free-flowering Perpetual Carnations to grow for furnishing cut blooms in winter?—P. S.

No. 379.]

SATURDAY, FEBRUARY 22, 1879.

Vol. XV

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE TEA-SCENTED ROSE.

(Continued from page 114.)

Then will I raise aloft the milk-white Rose,
With whose sweet scent the air shall be perfumed.

Shakespeare.

LOUISE DE SAVOIE is one of the most robust of the Tea-scented Roses, but, like the article which is sometimes "recommended as a good, useful Family Tea," is not of *la première qualité*, and not many of its large and abundant flowers have the symmetrical outline which Rosarians love. No defects, however, can justify the insolent audacity of the young man who said, "that Louise was not a Tea Rose at all," and, when called upon to explain, replied, with a sinister drooping of the eye, commonly called a wink, "that if she was a *Savoy* she must be a *Cabbage*." The police are on his track, and there is a confident hope that he will be brought before the Tribunal of the National Rose Society very early in April next. Ma Capucine (the title perplexes me, for who would address a Capuchin nun or a Capuchin Caper, i.e., a *Nasturtium*, with such a term of endearment? and "ma" must, therefore, I think, be a misprint for *la*), is a seedling from Ophiré, and a most striking Rose as to colour. Her complexion is described by an eminent Rosarian as "coppery-red," but as this may be associated in some minds with hot coppers and alcoholic excess, I will suggest instead that combination of scarlet and gold, red and yellow, which we see in the *Tropæolum*, and which gives the name to the Rose. It is lovely in its buds, and as appropriate for the button-hole of the "best man" at a wedding as Madame Bravy, the next Rose of my selection, for the bouquet of the bride. Perfect in her own style of beauty is Madame Bravy, of exquisite shape, every petal of which is as regularly disposed as those of a white *Camellia*, but with a more pleasing, because less formal, grace; and in colour *Alba-Rosea* (by which terms, and no other, the Rose has been known to some Rosarians), that is, white and red, white, pure white, yet blushing in her modesty, like the bride who holds her in her hand. Madame Camille is a recent and welcome addition, in colour pink and white, in shape (as described in a French catalogue) *forme de coupe*, and what could be more appropriate for a *Tea*? Madame Falcot has a wide dominion over the hearts of men; however intently those hearts may be absorbed by business or by pleasure, above all she sits supreme. On the rail, in the club, in the counting-house, married or unmarried, they carry with them the image of Madame Falcot. I have seen her riding in the Park with the statesman and the general, the old and the young, the wise and the foolish, and invariably dispensing with a second horse, mounted, not as our foremothers, on a pillion behind, but secured in front—by a pin to the coat! I need hardly add that, having a complexion of "rich apricot-yellow," she evokes no jealousy. On the contrary; I was informed that only last season she was pronounced by one of the belles of the park aforesaid to be "a too awful sweetie," and when, hardly understanding the delightful diction of the day, I asked my informant kindly to translate it, I was contemptuously told that "of course, it meant a regular stunner and all that sort of thing." Madame François Janin is another of those small darlings, Mignonettes (and, in this instance, the Rose is as fragrant as the flower which specially bears that name) irresistible as we see it, with its bit of *Adiantum*, in the windows of the floral purveyors, and yet more winsome, as a matter of course amid its own leaves on the tree. This Rose gives a most ample harvest of its bright orange flowers under glass, but I must add that I have not yet seen it in its happiest phase out-of-doors. Mr. William Paul, in the last issue of his "Rose Annual," give us the chromo-lithograph, from a picture

by Mr. Fitch, of a most lovely Tea-scented Rose, Madame Lambert, which has flowered with him beautifully under glass, and, according to the portrait and description, must be the Rose of its season. The petals, which are ample and well-formed, are of a bright primrose-yellow, deeply edged with a soft rose. Mr. Geo. Paul tells us that Madame Lambert is "of very fine and splendid China-like habit," and we have, therefore, every ground for hoping that we shall soon realise in our gardens the manifold charms which in this country have so far been seen only under glass. Madame Margottin well deserves a name, beloved by those Rosarians, to whom "old Jules" has been a dear and faithful friend for so many happy years. The pale yellow petals change into roseate tints in the centre of a large, and globular, and very attractive flower. Were we to serenade Madame Mélanie Villermoz, our song must surely be—

We have lived and loved together
Through many a changing year.

She seems to be acclimated to the severities of our English seasons, and, before the seedling Brier was in use, was one of the few of the Tea-scented family which rarely disappointed our confidence. In its best form it is a large and very handsome Rose, with the white outer petals deepening towards the centre into red, a good traveller, and, therefore, a reliable Rose for the show. Marie Sisley is a most charming contrast to her sister Aline (previously noticed), both daughters of Guillot, and born at Lyons. Like Minna and Brenda in "the Pirate," the one is a blonde, the other a brunette. Aline a dark rose, and Marie a pale yellow, *largement bordé de rose vif* (as described by Papa Guillot), distinctly edged with bright rose.—The artist, who painted the clever likeness of Marie Van Houtte (Plate CLXI. p. 80), was unkindly dealt with by the florist who supplied the Rose. The painter, in fact, was placed in the unpleasant position of the man, who is represented, in an impossible drama, as having run away in the dark with the mother instead of the daughter. The Rose, so accurately drawn and coloured, is past her prime. I do not say that she is not still beautiful; many fair women never lose their beauty, and I have before me, as I write, a picture of my grandmother, which all admire who see—but had the portrait been taken two days earlier, the readers of THE GARDEN would have gazed on a far more lovely Rose. For, indeed, she is, in her perfection, like the missing Flora, as described by her swain to the shepherds, "in form and feature beauty's queen," whereas in the picture the shape has lost its symmetry, and collapsed into a condition designated by an old Yorkshire gardener as "fodbery;" and the pure tints of primrose bordered with rose have, I cannot say disappeared, but have lost much of the beauty which they possess from their arrangement before the Rose passes from its most perfect form.

When the first grand *Fête des Roses* of the season was held last summer in the Crystal Palace by the National Rose Society, a small company of skilled Rosarians was anxiously but happily engaged in closely inspecting and earnestly discussing the merits of an unknown Rose. Each visitor was invited on arrival by the owner, Mr. Arthur Soames (a gallant young officer in the Wars of the Roses, who will one day be a *Maréchal Vaillant*), to scrutinise and then to name this Rose. Each at first looked amazingly wise and confident, with an expression which seemed to say, "Enquire within for everything;" but this aspect of sagacity gradually changed first to doubt and then to despair: "'tis this, and 'tis that, we cannot tell what." In two conclusions we were unanimous—that the flower before us was a gem of purest ray serene, one of the most perfect Roses of the show, and that not one of us had seen it before. Mr. Soames was not himself certain as to the name (the tally having been lost, if I remember right), but he believed it to be *Monsieur Furtado*, and from the description given in the catalogues, French and English, I fully concur in that belief. In the former it is justly announced as *fleur grande, très pleine, superbe*, and in the latter "fine, bright, sulphur-yellow, large, full, and good form, an improved *Narcisse*." The plant is of delicate habit, but this is often the case with new Roses, weakened by a too rapid multiplication; and we must endeavour, by a careful and patient culture, to realise the wonderful capabilities which we know belong to this illustrious stranger. Some of the buds, which Mr. Soames kindly

sent to me, have so far outlived the severities of this abnormal winter, and the Rose which he showed us in June last, will ensure for these little Furtados all the vigilance of a Rosarian's love.

There is one Rose—only one, good gentlemen—which I do not appreciate, do not admire, as (I suppose) I ought. Seriously, it is a sad confession to make, because no one sympathises with me, and, being a gregarious animal, I don't like isolation; I feel like one who treads alone some Floral Hall deserted. Though I do not believe in *Vox populi, vox Dei*, because poor human nature is swayed more, as a rule, by passion than by principle, I know that it is not good for man to be alone, even in his estimation of a Rose. I am aware that Niphetos (the pronunciation is Niffytos, not, as some utter it, Ni-fee-tos, because the e in the Greek word, from which the Rose is named, and which signifies a snow shower, is epsilon and not eta, not long but short), I am aware that Niphetos is the *Rose par excellence* for the London market, that its buds are grown by the thousand for button-holes and bouquets, and I can see that in its babyhood the Rose is beautiful, but in its maturity, though again and again I have shown it in victorious "stands," seen it pointed at, and heard it praised, as one of the most effective flowers in the box, yet can I never regard it with that tender devotion and admiring love with which I gaze on Catherine Mermet, Marie Beauman, or La France. There seems to me no life, no character, no sentiment about Niphetos. It resembles one of those imitations of the Rose which are so exactly correct in their formation and colouring, and yet want the freshness, the spirit, of the reality; or rather, I would say, that while in these artificial semblances there is always something defective, it would be possible, in my opinion, for a clever artist to reproduce in white paper a *fac-simile* of Niphetos which would deceive the connoisseur and defy the critic. More I dare not say. It may be, indeed, that in this matter I am the dupe of some optical infirmity, some prejudice which I cannot overcome, but, in speaking of Roses, all that is in my heart must be spoken, even though my candour should imperil that sympathy of my brethren, which I dearly prize. *Perle des Jardins*, in a fine hot summer, grows and blooms abundantly, and its yellow Roses, deepening in the colour of their central petals, are often very beautiful; but with me it is as a voyager who, merry and loud while the calm continues, is among the first to collapse when seas are rough; or like one of those fine-weather Christians who come to church in their new hats and bonnets only when the sun shall shine.—*Perle de Lyon*, though its title is not so pretensions, is a more desirable Rose, of an exquisite form, well delineated in the engraving given by Messrs. Sonpert & Notting in their *Catalogue Général* for 1878-9, and having large, deep yellow flowers.—Rubens would have rejoiced in the Rose which bears his name. Though in many points different and distinct from *Deveniensis*, it bears a general resemblance to that glorious flower, and I have grown it on a wall with a south aspect as large and as lovely. Here is the truthful description given by one who has long had signal success in the culture and exhibition of Tea Roses, Mr. Cant, of Colchester (and all of us like Canton Teas): "white, delicately tinted with rose, large and very beautiful, first-rate form, a superb variety." Rubens, nevertheless, is surpassed, as a rule, by *Souvenir d'Elise Vardon*, and Mr. Cant adds the words "splendid" and "magnificent" to a description in other respects very similar.—The penultimate o seems to suppress the idea of relationship between Miss Eliza Vardon and Miss Dolly Vardon (though members of the same family do not always spell their names alike, e. g., the Smiths and the Smythes, the Taylors and Tayleures, &c.); but, be this as it may, they are alike charming in their different styles of beauty, and I am quite sure that Dolly (of whom we had a souvenir no long time since in a revival by our damsels of her quaint kirtle) that Dolly, "all smiles, and dimples, and pleasant looks," was never more admired by Mr. Simon Tappertit, handsome Joe Willet, or "the fifty or sixty young fellows who were breaking their hearts to marry her, and for whom she cared no more than if so many oysters had been crossed in love and opened afterwards," than our Belle Elise by her fond adorers wherever she deigns to smile.

S. REYNOLDS HOLE.

(To be continued.)

CULTURE OF OUTDOOR PLANTS FOR MARKET.

SWEET PEAS.—These are grown in considerable quantities near London for the sake of their blooms—a white and a scarlet-flowered kind being favourites on account of their decided colours. The seed is usually sown along the sides of walks and similar places in October and November, when our early culinary Peas are sown. When the plants appear above ground, a little earth is drawn up to them, and early in spring they are staked, which in a measure protects them from cold winds and frosts. If the weather be favourable, plants from these sowings come into bearing early in May, and afford a good supply of blooms until the end of July. The earlier Sweet Peas can be got into bloom the more valuable they are for market purposes, and the more regularly the blooms are kept cut the longer the plants continue to grow and flower. Successional crops are obtained from sowings made in spring, but the summer and autumn crops are, on account of the drought, very often but short-lived. A good, heavily-manured piece of ground is in all cases chosen for them, and this in as moist a situation as can be secured. All expanded flowers are cut three times a week, tied in bunches as large as one can hold in the hand, packed in baskets, and taken to market. As in the case of Wall-flowers and Daffodils, the retail dealers who purchase them untie the bundles and, after selecting the best blooms for bouquet making—for which purpose they are admirably adapted—tie them into smaller bunches, and sell them for 1d. or 2d. each. A good plantation of Sweet Peas in favourable seasons is highly remunerative; but in very dry weather little profit is realised by their culture. A portion is also left untouched for seeding purposes. When the pods become brown in the autumn the plants are pulled up, tied in bundles, and housed until a convenient time has arrived for threshing out the seeds.

EVERLASTING PEAS.—These are not grown to any great extent—a circumstance to be wondered at, as there are many kinds which would yield plenty of bloom, and of a good colour. *Lathyrus latifolius* and its white variety, *L. Sieboldi*, and also the red-flowered *L. Drummondii*, for example, one would think, might be grown against walls or in any corner where good soil could be procured. Their blooms are, however, not so sweetly scented as those of the Sweet Pea.

VIOLETS.—During the autumn and spring months any one visiting Covent Garden Market, or its neighbourhood, must have seen piles of Violets exposed for sale. They are tied up in small bunches, each surrounded by a few green leaves of their own, and sold for 1d. each, or more, according to the time of year and the quantity in the market. At Twickenham, Strawberry Hill, Richmond, Teddington, and other places on the side of the Thames, Violets are grown to a considerable extent. They are usually found under orchard trees—a position in which they thrive remarkably well—and I have often seen dozens of women gathering the produce and placing the bunches, after being tied up, in square hampers, ready for men to carry on their heads to the nearest railway station to be sent to market. The following extract respecting Violet culture is taken from "The Gardener" for the month of September, 1877:

"A position sheltered from the north and west, and sloping towards the south, is chosen for the plants, as, under such conditions, they flower better at the close of the autumn, and also in winter than they otherwise would do—seasons when the flowers bring the highest prices. Before planting, the soil is well stirred up with the spade,

and, although the roots of the Violet do not descend very deep, the plants grow so much the better and more vigorously in proportion to the depth of soil. The large lumps or clods are well broken and pulverised with a long-toothed iron rake or a fork. Lines or drills are then marked out, at a distance of 1 ft. from each other, and the plants are set at about the same distance from each other in the rows. Every four rows form a bed, so that the flowers of two rows may be gathered from the alley on each side without trampling on the soil of the bed or on the plants themselves. The plants are chosen from the strongest runners, which the largest plants produce in quantities, like the Strawberry. The most favourable season for planting is in March or April, the plants being usually inserted in the rows with a dibber. The kind of manure employed, especially in cold soils, is street-scrappings, and is the manure almost exclusively used by Violet growers and Strawberry growers in the neighbourhood of Paris. The third year after planting, the flowers become less abundant, are smaller in size, and grow on shorter stalks. After the third year the plants are pulled up, and fresh plantations are made. A few growers adopt frame-culture during the winter and early spring months, the frames being surrounded with warm manure or leaves for the purpose of keeping out the frost. When treated in this way the plants will afford a succession of flowers up to February. Taken altogether, the profit on each frame used in forcing Violets in this way amounts to from 10s. to 20s. Violets are also forced in heat, either on a hot-bed or with the assistance of hot-water pipes, and sometimes both are employed together. This method is generally resorted to when a good supply of flowers is desired about New Year's day.

It is difficult to calculate accurately the probable produce of a crop of Violets, as it is exceedingly variable. In one season 12,000 bouquets may be gathered from $2\frac{1}{2}$ acres of ground, while in another season the same ground may not yield more than 3000 bouquets. But usually the profit is greater when the general crop is moderate, as, when the crop is abundant, prices fall very low in the market, and sometimes hardly do more than repay the various expenses of culture, rent of ground, &c. This will be made plain from the following calculations on the produce of $2\frac{1}{2}$ acres during three seasons of maximum, medium, and minimum produce. In a year of plenty (say 12,000 bouquets to $2\frac{1}{2}$ acres), the first bouquets of winter and the latest in autumn will fetch about 5d. apiece, and when the full crop comes in in spring, 1d. apiece. Supposing one-half the crop sells at the first price, and the other half at the second, we have 12,000 bouquets at 3d. each = £150. Against this we must set off the expenses as follows:

Rent of $2\frac{1}{2}$ acres of ground	£12 0 0
Digging and preparing the soil	4 8 0
Three hoeings at £2 8s. 4d. each	7 5 0
Manure	14 8 4
Planting	2 10 0
Spreading the manure	1 5 2
Cutting off the runners	0 16 8
Gathering, packing, and other market expenses of 12,000 bouquets at 1d. each	50 0 0
Total	£92 5 2
Deducting this from	£150 0 0
	92 5 2
We have a profit of	£57 14 10

If, now, we take a season with a medium crop (say 6000 bouquets to $2\frac{1}{2}$ acres), these will sell for 2d. each at the lowest price, and for 10d. each at the highest, or 3000 at 2d. each, and 3000 at 10d. each = £150. The expenses will be the same as in the last case, except for the gather-

ing, packing, and other market expenses, which, for 6000 bouquets at 1d. each, will be £25, instead of £50. Deducting this from £92 5s. 2d., we have £67 5s. 2d., which, deducted from £150, the market value of 6000 bouquets, leaves a profit of £82 14s. 10d. Lastly, let us take a season with a minimum crop of, say, about 3000 bouquets to $2\frac{1}{2}$ acres, of which 1500 will fetch 1s. 0 $\frac{1}{2}$ d. each (or £78 2s. 6d.), and 1500 will sell for 4d. each (or £25), equal in the total to £103 2s. 6d. The general expenses will be still the same, except in the matter of gathering, packing, &c., which for 3000 bouquets at 1d. each, will amount to £12 10s. To this must be added the other expenses, which, as before, amount to £42 5s. 2d., making a total of £54 15s. 2d. Deducting this from £103 2s. 6d. (the market value of the 3000 bouquets), we have a profit of £48 7s. 4d. From the foregoing calculations it will be seen that the profit is greatest in seasons of medium produce, since, in years of maximum yield, the various expenses of gathering, packing, &c., are much increased, while the market price is diminished to the lowest—indeed, sometimes so much that growers do not care to gather their flowers. On the other hand, in seasons of minimum produce, it is the other general expenses, which, remaining, as they do, unchanged, swallow up the greater part of the profits. It must be understood, however, that the figures given here are only approximate."

Those who purchase or are presented with bouquets of Violets have, as a rule, little idea of the labour required to produce them and prepare them for market. Violets are cultivated on a large scale around London, and in some parts of Kent, Surrey, Middlesex, and Sussex Violet culture is a most lucrative industry.

LAVENDER.—Under some conditions this is, perhaps, a more profitable crop than either vegetables or fruits, and few people are aware of the immense quantities of it which are grown within 20 miles or so of London. In Surrey alone there is supposed to be no fewer than 350 acres of land devoted to its culture, and almost as large a space may be found under Lavender in Hertfordshire. At Mitcham both cottagers and market gardeners grow Lavender for sale, and when the fields of it are in bloom its fragrance pervades the air for miles. Lavender is increased by means of rooted slips, obtained by division of the old roots. The young plants are put out in March or April, 18 in. apart, in rows half that distance asunder, the space between the rows being the first year planted with Lettuce, Parsley, or some similar crop. When the Lavender becomes crowded, each alternate row and plant are lifted and transplanted to another field to form a new plantation. The remaining plants then stand 3 ft. apart each way, and intercropping is discontinued. During the first two or three weeks in August the flowers are harvested. The stalks are cut off with a sickle, bound up in sheaves similar to Wheat, and carried to the homestead for distillation or for other purposes. In Hertfordshire a somewhat different method is practised. The young plants are put out in November, 3 ft. apart each way, no other crop being grown between them, and the ground is well tilled and attended to. When three years old, the plants are considered at their best, and after they have been planted seven years they are dug up and the ground is replanted. A new plantation is, however, made every year or so, and thus there are always young, vigorous plants upon which dependence for a crop of flowers can be fully placed. It is estimated that there is on an average sufficient Lavender flowers grown in England to produce from 25,000 to 30,000 gallons of Lavender water, the greater part of

which is produced at Mitcham and Hitchin. Some market gardeners also grow Lavender in spare corners and between fruit trees. This is cut before the flowers are fully expanded and sent to market, where it is tied in small bundles, and hawked about the streets or sold on the stalls for 1d. or 2d. each. Where a stock of young, vigorous plants is kept up, good profits are often realised by the culture of Lavender for sale in this way.

CHRYSANTHEMUMS.—The blooms of the incurved Japanese section of Chrysanthemums during autumn, when Camellia blossoms are scarce, have a good run in the market, and fetch high prices. White blooms are most in demand, and at one time the Anemone-centred or quilled kinds were most thought of, but since such beautiful kinds belonging to the Japanese section have been raised they are less popular. The flowers of the Japanese varieties are much more graceful than any of the other kinds, and on that account everyone admires them. For sale in pots large-flowering Chrysanthemums are little grown, but the Pompon varieties are cultivated to a large extent for this purpose. Cuttings of these are struck in frames in June after the latter have been cleared of bedding plants. As soon as struck, the Chrysanthemums are transplanted to the open ground with a dibber, allowing plenty of space between them. The points of the shoots are picked out once or twice during the summer, and as soon as the plants show bloom they are lifted and potted into convenient-sized pots, well watered, kept in the shade for a time, and housed when sharp weather is apparent. The soil in which they are planted is sandy loam, light, but not very rich. The three forms of *Cedo Nulli*—golden, lilac, and white—are the principal kinds that are grown in pots. A section of early flowering Chrysanthemums, too, which has of late years been introduced is very eligible for market purposes. The plants assume a dwarf, compact habit, and the flowers, though not so large and perfect as the autumn-flowering kinds, are very effective, and, either in a cut state or on the plants, are valuable, especially as they come in in August. Some of the best kinds in the large-flowered section, with incurved petals, are: Alfred Salter, rosy-lilac; atro-rubens, dark red-carmine; Attraction, bluish; Beverley, ivory-white; Cherub, golden-amber; Christine, peach; Empress of India, pure white; Gloria Mundi, golden-yellow; Guernsey Nugget, primrose-yellow; Mount Edgecumbe, white, rose tinted; and, the best of all, Mrs. George Rundle, pure white, of fine form. Among the Japanese or ragged flowered kinds are: Jane Salter, white, tipped with rosy-lilac; Reine des Blanchés, white; Magnum Bonum, rosy-lilac; Boule de Neige, pure white; Elaine, white and carmine; Garnet, blood red; and James Salter, lilac.

MICHAELMAS DAISIES.—When flowers are scarce in the autumn, cut blooms of these may often be seen in the market, where they sell for the same price as those of Violets, viz., a penny a bunch. The varieties usually consist of the small-flowering kinds, which, when neatly arranged and surrounded with Violet leaves, are very pretty; and shoots of some kinds bear so many flowers as to form neat little bouquets of themselves. The plants are increased by means of cuttings, and also by division of the old roots when young plants are required for sale in pots; but when cut bloom only is needed the old plants are frequently allowed to remain in some out-of-the-way corner undisturbed for years. Of small-flowered kinds, the best for market are *Aster dumosus*, bluish; *ericoides*, white with yellow centre; *horizontalis*, white,

rosy-lilac centre; *multiflorus*, white, neat and pretty; and *Shorti*, lavender-blue. Among the large-flowered and attractive kinds which bloom in autumn are: *Amellus*, lilac-blue; *casuariobius*, blue, orange centre; *grandiflorus*, purple; *linarifolius*, purplish-lilac, light centre; and *Novæ-Angliæ*, rich, shining rose, with an orange centre.

DAHLIAS.—Many of the dwarf varieties of these may often be seen offered for sale in pots in the flower market. They are struck from cuttings inserted in the spring, and planted out-of-doors in rich soil as soon as the weather is sufficiently mild for them. As soon as the flowers begin to expand, the plants are lifted and put into 6-in. and 8-in. pots, well watered, and brought to market, where they find a ready sale for the ornamentation of windows and balconies, positions in which, if shaded and kept well supplied with water, they continue in good flowering condition for a long time. The flowers of both the large-flowering and the Pompon varieties are also largely used in autumn in the commoner kinds of bouquets, along with Roses, Pelargoniums, and other flowers which are then plentiful, but their culture expressly for market is not great. They are increased by division of the old tubers, or by taking up the same and introducing them into heat in spring; when they throw up young shoots, those which are not pithy are taken off with a heel and inserted in small pots in a gentle bottom-heat. When well-rooted, they are hardened off, and in June are planted out-of-doors. The majority of the blooms which come to market are, however, obtained from plants left in the ground for years, the roots of which are protected in winter by a covering of ashes or loose litter. Late in autumn the flowers are most valuable, especially the white ones of the Pompon class, and if they are protected from autumn frosts they sometimes fetch good prices.

To these may be added Canterbury Bells, Delphiniums of the formosum type, Anemones, and Eschscholtzias, the blooms of which are largely used in the commoner kinds of bouquets, but none of which are sold in pots. Roots of them, as I have before stated, are disposed of by thousands outside the market. The blooms of the blue Cornflower (*Centaurea Cyanus*) are largely used in bouquets in spring and summer. It is a native plant, and grows wild in abundance in many parts of England. Any one growing a stock of it, and allowing the flowers to go to seed, has no difficulty in getting plants of it, and, as regards blue flowers in Covent Garden, this and *Stokesia cyanea*, to which allusion has already been made, are the chief, not forgetting Blue Cinerarias and Violets.

C. W. S.

A Reminiscence of The Tulip Mania.—At the end of last December, says the "Deutsche Gärtner-Zeitung," two houses in the main street of Hoorn, about twenty miles from Amsterdam, were offered for sale for demolition. These houses were purchased during the Tulip trade which flourished from 1634 to 1637 with the proceeds of three Tulip bulbs! The record of this remarkable purchase was preserved in a stone inserted in the gable of one of the houses.

A New Darlingtonia.—This, which was found on Black Hawk Creek, in Sierra county, is represented in colours in the "Californian Horticulturist" for January. It presents a marked variation from plants of that family heretofore described. The "Scientific Press" some little time ago, represented the flower as about 12 in. high at maturity; in the patch of Darlingtonias from which the specimen in the "Horticulturist" was taken the flowers reach an average height of 40 in. Newberry's report on the Darlingtonia, in Prof. Bolander's library, represents the bracts upon the scape as increasing in number and size near the blossom, and finally blending with the floral envelope. With this the illustration given in the "American Agriculturist" agrees. A writer in the paper just mentioned examined hundreds of scapes, and found each without a vestige of a bract nearer than 2½ in. from the flower.

THE FLOWER GARDEN.

A QUIET NOOK.

The accompanying little drawing represents a scene at the bottom of one of the curious narrow vales in Somersetshire, in which grow many wild flowers that are not found in the open fields. It represents a colony of Solomon's Seal and Paris quadrifolia clustering over and around an old stump, and happy under the shade of the Hazel trees and beside the little stream that winds through the valley. It was drawn from Nature by Mr. Alfred Parsons, engraved by Mr. Hyde, and is one of the cuts prepared for a forthcoming edition of the "Wild Garden." It need not be said that numbers of hardy exotic



Solomon's Seal and Paris quadrifolia at home.

plants and ferns would thrive better in such places than in our trim borders, and would, moreover, thrive without care. W.

VIOLAS INTERMIXED WITH PELARGONIUMS.

VIOLAS, whether considered as such, or as Pansies, the two being still distinct, though blood relations, have, in my own memory, through patience, skill, and energy, made a development outstripping that of any flower with which I am acquainted, and, looking at that pretty weed of our arable land, the Viola tricolor, and those exhibition trays of large circular blooms of nearly every possible colour called Pansies, most of them seemingly cut out of Genoa velvet, there really appears something in selection and development. The Violas, so understood, are evidently nearly approaching the Pansies. Whilst the Pansy of the florist seems to have derived its excellence and perfection from itself, without aid from what we may call intermarriage, the Viola appears, as improved, to be the result of cross breeding or hybridising, and appears to be made up of the British Viola lutea, the Pyrenean V. cornuta, and the cultivated Pansy. The Viola cornuta made a stir on its first introduction into modern gardening, and its descendant, V. Perfection, is still one of the best bedding Violas known, retaining the colour of its parent (cornuta) with the size of a moderate Pansy, and what I intended, when commencing this article, was to point out a purpose for which it is peculiarly adapted, and that is, softening or toning down. A few plants of the above Viola, systematically planted with scarlet Pelargoniums, have a fine, cooling effect. Plants of it thus treated become somewhat drawn, so as to mingle their

blooms with those of the Pelargoniums, among which, owing to the size of bloom, it is very striking, yet soft and pleasing. Verbena venosa I have seen employed for the same purpose, but it is not to be compared for effect with the Viola. Among pink bedding Pelargoniums it is more beautiful still, owing to the nearer affinity in colour. The Viola will maintain the beauty of the bed when the blooms of the Pelargoniums are withered or wasting, and sparingly introduced among beds of white Pelargoniums (I am speaking of zonals) it is truly beautiful; here it may be said to give a warmth to the cold white of the Pelargoniums.

Ormskirck.

T. WILLIAMS.

ERYTHRINA CRISTA-GALLI, AS A BEDDING PLANT.

THIS, although a native of Brazil, is found to be sufficiently hardy to withstand (with the aid of some slight protection, such as that accorded to beds of Fuchsias) the rigour of an ordinary winter in this country. For many years it was supposed to require the temperature of a stove, and with liberal treatment it may be induced (when grown under glass) to flower satisfactorily twice during the season. It is subject, however, to the attacks of red spider when grown under glass, and on that account a somewhat close and moist atmosphere, and frequent syringings, are necessary to its proper development. It is, however, when planted out in a suitable soil and situation in the open air, that this plant, both as regards foliage and flowers, attains its greatest degree of perfection, and a good sized bed of it in the flower garden, associated with other plants, forms an attractive object; so much so, that it is to be regretted that it is not used for this purpose more frequently. It may be increased by means of seed, where that can be conveniently had, but it is generally grown from cuttings, which strike root readily, and in order to obtain them, a few old plants in pots should now (middle of February) be plunged in a brisk bottom heat, and these will soon furnish an abundant supply of cuttings, which should if possible be taken off with a heel, and inserted in a mixture of silver sand and finely sifted leaf soil, and placed under a hand-glass in the propagating pit. Here they will speedily strike root, and should afterwards be potted off singly when sufficiently rooted, and, under careful treatment, they will be large enough to plant out with other bedding plants about the end of May. They will bloom more or less freely during the first season, and if they can be preserved in the beds through the following winter, they will flower in greater perfection the second and succeeding summers.

The bed intended for Erythrinæ should be carefully drained, unless the subsoil is naturally of a light or gravelly character, as the plants during winter are more likely to suffer from damp or stagnant moisture than from severe frost, as the surface of the bed can readily be mulched with dry, littery matter, so as to effectually protect the roots of the plants from the effects of the latter. The bed should be composed of moderately rich, light soil, and the mulching should be removed soon after the middle of May, when the decayed stems should be cut off close to the surface of the soil, and a slight surface-dressing applied. As the young shoots progress, they will require to be neatly staked, more particularly if the bed be in an exposed situation. It is, of course, too early as yet to ascertain how such plants have fared during such a winter as that which we have just experienced, when the frost has penetrated to a much greater depth than is usually the case. But in a narrow border in front of a plant house, I saw, some years since, a line of these plants in full flower, and producing a grand effect. I was informed that they had withstood the exceptionally severe winter of 1860-61, and that they had never been protected in any way. It is, however, possible that in that case the roots of the plants derived benefit from their proximity to the front wall of a heated structure.

Culford, Bury St. Edmunds.

P. GRIEVE.

Stem Roots a Protection to Lily Bulbs.—As the writer in the "Californian Horticulturist" says (p. 118):—"We agree as regards the decay of the old bulbs and the formation of new ones internally," will Mr. T. Smith, of Newry, be good enough to say if

in "the interesting discovery he made a day or two ago" (p. 135), the bulbs he then found, which, as he tells us, "were perceptibly larger than when they were planted," were the same identical bulbs that were planted in "the beginning of April last year?"—B.

THE "FLOWERING" SPURGE.

(EUPHORBIA COROLLATA.)

THIS is one of the best of American plants, and in trade language it has "money in it," as it is one that may be grown by florists as a source of profit from the sale of its flowers. The genus *Euphorbia* is a large one, there being over 700 species which are widely distributed; those found in temperate climates are herbs, often small and inconspicuous, while in tropical countries they are shrubs and even small trees, some of which are very thorny and grotesque in habit. Without going into the details of structure, it may be said that the flowers are exceedingly simple, having neither calyx nor corolla; the male flowers consist of a single stamen with a small scale, and the female flowers of a single pistil upon a long stalk. Several of these simple staminate flowers and one pistillate flower are placed in a sort of cup or involucre, which hides the stamens, but the pistil, having a long stalk, stands out beyond the involucre. The latter, which passes for the flower, contains a whole cluster of very simple flowers. Though the flowers themselves are not showy, it is often the case that the parts surrounding them are very much so. One of the most brilliant plants of our hot-houses is a *Euphorbia*, popularly known as *Poinsettia*, the leaves which surround the heads of involucre of this, are of the most intense scarlet colour. It is for these brilliant upper leaves—or bracts, as the botanist calls them—that large numbers of these plants are cultivated, as they are specially in demand for holiday decorations. In other greenhouse species, the involucre or flower-cup itself is showy, being furnished with large petal-like scarlet appendages or lobes, which make it very closely resemble a real flower. In our native Flowering Spurge (*Euphorbia corollata*) these appendages are of the purest white, and the plant appears as if it bore a cluster of small white flowers, while it is really a mass of very showy flower-cups, inside of which the real, but minute flowers are hidden, though in time the pistillate flower shows itself above it. This plant is found from New York westward and southward; it is abundant in the Pine-barrens of New Jersey, and in similar localities to Florida. It has a large branching, perennial root, which sends up several stems 2 ft. to 3 ft. or more high; the leaves upon the stem are scattered, without foot-stalks; at the top of the stem are several branches, and these branching again form the umbel-like flower cluster, at the base of which is a whorl of several leaves. As with other *Euphorbias*, all parts of this plant contain a milky juice which flows freely whenever a portion is cut or broken. The dried root has been more or less used in medicine, especially in the Southern States. The Flowering Spurge is an excellent border plant, as it produces abundance of—what in this sense we may call flowers—in July and August, and they last until October and November. The white petal-like lobes do not readily wither, and on this account the flowers are very useful for bouquets and floral decorations; small, white, lasting flowers are always in demand for such purposes, and the plant is likely to become popular among florists and those who grow flowers for cutting. While we have no doubt that the Flowering Spurge will prove a valuable plant to force for cut flowers in winter, we shall not recommend its use until we see the results of experiments now being made in this direction. We have mentioned that the pistillate flowers stand out beyond the involucre; as these are green and unsightly, they much detract from the appearance of the cluster, and they should be picked off when used for bouquets, &c. We are glad to see that this very handsome native plant is offered by dealers, though some of them make a mistake in claiming that it is new. That enthusiastic cultivator, the late Mr. Joseph Breck, in his "Book of Flowers," published a quarter of a century ago, and in his later "New Book of Flowers," speaks of it as a "most excellent species," while it was figured and commended as long ago as 1819 in "Loddige's Cabinet," and Duchate states that it was introduced into the French gardens in 1803. Nevertheless, a plant in the sense of being little known may be said to be new.—"American Agriculturist."

have always an abundance of flower in summer. Few plants are more showy in old-fashioned herbaceous borders than *Tigridias*.—CAMBRIAN.

THE FRUIT GARDEN.

TRANSPLANTING AND RENOVATING OLD VINES.

I NOTICED IN THE GARDEN a few weeks back some inquiries respecting the transplanting of old Vines, and as I have of late years been engaged every autumn in renovating borders, I am able to say that such work, if taken in hand at the proper time, may be carried out with the greatest success, and in most cases with marked benefit to the Vines. The reason for this is not so obvious at first sight, but when we take into consideration the immense increase clipping and severing some of the largest roots causes in the number of feeders, the gain at once makes itself apparent, especially when we bear in mind the large amount of fresh food there is supplied by the formation of new borders. Although the Vines I had to deal with were not actually lifted, they were to all intents and purposes the same as if they had been, as every particle of soil was harrowed out from among them, and every root laid bare under mats till new loam was put under them. From beginning to end this took a week, as working the earth out from among the roots was rather a slow process, but although this was the case, the leaves never flagged during the whole time, nor afterwards showed that they had been interfered with. Our success was due to the precaution we took to carry on the work during a dull time, when we could have the house entirely closed both day and night, and the foliage frequently syringed. Had the sun broken through, we were prepared with shades to run down the roof, and these we did use occasionally for a fortnight or more after the work was completed, for though the leaves were nearly ripe, we were anxious to preserve them fresh and keep them from falling as long as possible. This was done not only with a view to plump up and finish the buds, but to aid fresh root action before the winter set in, by doing which, the Vines started strongly the following spring and bore excellent crops. Those operated upon in one case were upwards of twenty years old, and had stems as large as one's arm, but for all that they already show symptoms of becoming regenerated and of being as vigorous as ever. Any one, therefore, who has Vines that from any cause do not give satisfaction, need not hesitate setting about their renovation, for there is no plant with which I am acquainted that is so tenacious of life or that will bear so many liberties being taken with it as the Vines. The best time to operate on old Vines is the last week in September or the first in October, as then the wood is firm, and the foliage has well nigh reached maturity, but the season at which the work should be done will depend in some measure on whether the Vines have been forced or not; for if they have, of course they will be in a more favourable condition, and, in that case, will bear rough treatment sooner than they otherwise would. Whenever done, a great point is to prevent their roots from drying, which may be done by having mats, thick cloths, tarpauling, or anything of that kind to lay over them as they are got out of the soil, and by keeping them frequently syringed or sprinkled with water from a fine-roset pot. In addition to this, the house should be saturated with moisture, and so shaded that it may be left shut without the temperature running higher than between 80° and 90°, as, beyond that there would be considerable risk of the leaves scalding, which would defeat the object in view. It will be found that the best way to set about getting the soil out is to open a wide trench first right along the front of the border, and, in doing this, cut all the roots as they are come at that may have strayed beyond. The space so opened out will afford every facility for following them on by working down the earth from among them with the aid of a sharp-pointed fork. While this is being done by a careful handy man or two, others, less trusty or expert, may be engaged removing it out of the way, by which means the work may be carried on more regularly and expeditiously than if conducted in a sort of hap-hazard manner. It frequently occurs that people try to improve the health and condition of their Vines by simply top-dressing the border, but a few inches of fresh loam placed there might

Tigridias Out-of-doors in Winter.—In the remarks which accompany the excellent coloured plate of the *Tigridia* given in THE GARDEN (p. 142), it is stated that "some cultivators allow the bulbs to remain undisturbed during the winter." In Wales we never think of lifting the roots, and they succeed admirably; all we do is to put a little light manure over them every winter, and we

as well be in the pasture for all the good it does, as roots, unless encouraged by heavy mulchings to draw them upwards, never feed so near the surface. This is readily accounted for by the extreme upper portion being subject to so many changes, not only as regards warmth, but moisture likewise, besides which, light penetrates some little way, and roots seem to have an inclination to avoid it and alter their course accordingly. On the other hand they are attracted towards manure, and this is why they grow upwards when it is applied as a surface dressing, and another reason is that then the conditions are more favourable for their travelling in that direction, as a mulching effectually excludes light and intercepts evaporation, the absence of moisture being one of the primary causes of driving them below to search for it at a lower level. It will be seen, therefore, if fresh soil is to be made available for them to feed on that it must either be buried by having a covering of manure to entice the roots to it, or it must be put near where they are, which is by far the wisest plan, and to do this at least 1 ft. of the top should be removed and a portion of that held back near at hand to scatter on again over the loam. Vines, like all other plants of a gross feeding nature, like sod fresh cut from a meadow, and the more loamy and fibry it is the better it suits them, and the less tendency has it for running or binding together. When such can be got, to attempt improving it by mixtures of any kind is the greatest mistake possible, as, except a few bones, whatever else is added tends to spoil and render it less lasting by hastening the decomposition of the vegetable fibres it contains, which, in their slow decay, absorb the gaseous juices and yield them up when called on by the rootlets to do so. Leaf mould is like poison, as, when it lays quiet and dry it is sure to generate fungus, and this, when it comes in contact with plants, attaches itself to the bark, which it permeates in all directions with a perfect network of the most minute threads, the effect of which is to utterly paralyse all healthy action and ultimately to destroy life altogether. Mortar rubbish and such like materials are useless, for if employed in any quantity they impoverish the soil by causing too rapid drainage, and render the mass so loose and hollow as to afford no stability to the roots.

S. D.

HINTS ON ORCHARD-HOUSE CULTURE.

It is unlikely that the cultivation of fruit trees in pots, in these useful structures, will increase in popularity, owing to the close attention the trees require during the growing season; and yet where amateurs can find time to give personal attention to them, it is most interesting as well as instructive to note the growth and development of bud into blossom and leaf, to watch and aid the setting of the blossoms, and ultimately to realise the full fruition of one's labours in the handsome and luscious fruits. It is needless here to go into any lengthened details of orchard-house culture, but a few seasonable remarks may be useful. The orchard house is generally a glass structure of any convenient shape, constructed for its adaptability to grow fruits well, and especially in districts where the climate is not suitable, or in places where the character of the soil is not well adapted to the culture of stone fruits. Whatever may be the form of the house—and it is worthy of note that trees will do well in the ridge-and-furrow, span roof, half-span, or lean-to—the internal arrangements are of the simplest. The most primitive of any that have come under my observation, has consisted simply of a shallow trench dug in the centre of the house, the soil being thrown out right and left, and made level. Very few persons would be content with this style, while a few shillings expended on gravel and edging tiles would form neat borders and paths, always pleasant to look upon. A narrow house may have a path down the centre, with a border on each side; while one over 18 ft. wide should have a bed in the centre, with a narrow border all round the sides. The paths should be about 2 ft. 6 in. wide, and the borders for the trees may be covered a few inches deep with Cocoa-nut fibre refuse. The roots should not be allowed to grow out at the bottom of the pots. I place the pots on bricks, or raise them on inverted pots, to prevent this, and also to keep out worms.

If the pit trees have been wintered out-of-doors, they ought to be taken into the house by the first week in February, and they will require but little attention until the blossoms are expanded. See that the trees are well watered at the roots, without giving them too much. Give air freely, but keep the frost out. It will always pay to have a heating apparatus. No doubt good fruit has been grown in succes-

sive seasons without any such aid, but in some cases there has been a failure of the crops because of the unfavourable character of the weather when the trees have been in blossom. The effect of frost is not felt very much if there be plenty of sunshine by day. It is during dull, cold weather, with a low temperature at night as well as by day, that artificial heat is required. When the trees are in flower, it is as well to shake them gently twice a day, to distribute the pollen. In this way, a good "set" is generally secured. Where the natural soil of the garden is unsuitable, it is very desirable to grow the trees in pots, as a small quantity of imported soil serves for each tree. Good clayey loam from the chalk is the best soil for stone fruits, and it answers equally well for Pears; a fourth part of good rotten manure ought to be mixed with it, and in potting, the soil should be well compressed with a wooden rammer.

Unless for the sake of variety, it is not desirable to grow many sorts of fruit trees. Six good Peaches are:—Hale's Early, Early York, Royal George, Grosse Mignonne, Bellegarde, and Deseze Tardive. Nectarines:—Lord Napier, Murray, Pine-apple, Violette Hâtive, and Victoria. A few useful Pears are:—Beurré d'Amis, Beurré Diel, Louise Bonne, of Jersey, Souvenir du Congrès, Marie Louise, and Williams' Bon Chretien.—J. DOUGLAS in "Florist."

SAUCERS IN STRAWBERRY FORCING.

It sometimes happens that some of our most useful horticultural appliances sink in the estimation of those who employ them, owing to their being so used that they not only fail to confer any benefit, but actually prove a source of loss and inconvenience. Saucers have long been used in Strawberry forcing, and may, undoubtedly, be made valuable agents of fertility, and yet many a crop has been ruined by employing them in an injudicious and indiscriminate manner. A practice exists of placing Strawberries in pans as soon as they begin to grow. If the plants are thoroughly well-rooted, and if the watering is conducted by an experienced person, no harm will result from it, and, where the pots stand over hot pipes or flues, the saucers are useful for maintaining a healthy, moist atmosphere. But this practice has its dangers, and I would not recommend its adoption in a general way, as the water is apt to lie in the saucers just at a time when thorough drainage is most required, the effect being the destruction of the most important leaders of the plant. The real use of saucers is to enable the grower to administer such an amount of moisture to his plants as could not well be effected by any other means. Now, the question naturally arises at what period of their growth do they require to be thus saturated? The answer, which is easily given, is when they are fully furnished with well-developed foliage, and when the roots are in a very active state, a stage of growth never fairly reached until they are in flower. Before this time it would be safer to dispense with saucers altogether, and trust to careful waterings to supply the necessary moisture. In the earlier stages of growth the water cannot drain away too freely, and anything tending to produce stagnation will inevitably cause torpidity of the root, and eventually entail the destruction of those white fibres upon which depends the subsequent fertility of the plant.

I have known establishments in which Strawberries were always far from satisfactory, although there was ample accommodation for them. When, however, I saw that the plants were placed in pans before even the flower trusses had fully appeared, I was at no loss to account for the deficiency. In rejecting pans altogether we, however, run from one extreme to the other, and those who repudiate pans and saucers can have but a faint idea of what an important part they may be made to play in ripening off a heavy crop of fruit. In a previous number, "J. S. W." advocates the substitution of saucers of soil for the ordinary method, and I can believe that he finds his system beneficial. But useful as it may be in affording additional nutriment, to me it is open to the objection of not being able to supply sufficient moisture when the crop is swelling off. Perhaps for very early forcing there would be no difficulty experienced, but in April and May when we are liable to periods of hot, sunny weather, my experience has hitherto led me to believe that large plants cannot be maintained in a vigorous, healthy state, and heavy crops be ripened satisfactorily, unless there is provision for supplying an unlimited amount of water. The saucer, in fact, represents the delugings

which we find it necessary to administer to out-door plantations in hot weather; the amount of water which a well-fruited Strawberry plant will absorb in hot weather has often surprised me, and I have remarked that if this extra amount of moisture were not supplied, there was invariably a falling off in weight.

If hot weather should supervene when the fruit is three parts swelled, the plants, if luxuriant, will require much more water than can possibly be given them in the ordinary way of administering it, in proof of which I may cite instances when the pans were filled two and three times a day, and yet not a drop was left in them by the following morning. Let any one imagine the labour involved in administering this amount of water in the ordinary way, and how very likely the plants would be to suffer at some period of the day, especially when grown near the roof in a light, airy house. A strong-rooted Strawberry plant when in full fruit, with the functions one and all in a full activity, and subjected to a strong solar and artificial heat, is more liable to suffer from want of moisture than from a superabundance of it. There are times when it really appears to revel in sub-aquatic treatment, and, if, after a bright day, the pans be filled up with clean manure water when the house is closed, the appearance of the plants the following morning will fully indicate the beneficial effects arising therefrom.

With respect to letting the roots go out of the pot, my experience has led me to the conclusion that, if they go into fresh soil before the bloom is thrown up, an undue luxuriance of the leaf will be the result. I have often practised this method, but would never again allow the roots to work into the new soil before the plants were in flower, as, after that time, the increase of nutriment tells upon the fruit, which appropriates it to its own development. For this reason I would avoid strong stimulating manure in the earlier stages of forcing, but I have always considered soot water an admirable fertiliser at that time; it strengthens without stimulating, and may be freely used with perfect safety. There is not the slightest doubt that the red spider is enabled to fully establish itself when not only moisture but nutriment is deficient; the foliage becomes deficient in substance, and cannot resist its attacks. By preserving the roots in a perfectly healthy state, never overwatering in the first stages of growth, and supplying abundance of moisture and food when the plants are in full growth, the leaves will acquire such substance that the enemy can make but little impression on them. JOHN CORNHILL.

Byfleet.

MILDEW ON STRAWBERRIES.

I SEE it stated in THE GARDEN (p. 146) that the liability of the Black Prince Strawberry to mildew is an objection to it as a variety for forcing, which is quite true, for, so far as I have seen, it never escapes mildew, and usually suffers to such an extent as to render the fruit quite worthless; but I think I can guarantee that if the following measures be taken to check the mildew clean crops of fruit will always be secured. It is rarely that the mildew appears to a noticeable extent before the fruit begins to swell, and if, when the berries have just set, the plants are thoroughly sulphured, it will keep it down till the fruit is all gathered. It does not do much good, however, to dust the sulphur on the plants, the syringe must be used. A quantity of sulphur, according to the number of plants to be gone over, should be thoroughly stirred up in a little skim milk till it be disintegrated, and then poured into a pitcher of water and applied right and left to the plants till they are well wetted on the upper and under sides of the foliage and berries also. There is no danger of overdosing the plants, and it may therefore be applied freely. The water should be kept stirred while it is being applied, otherwise the sulphur settles at the bottom, and the plants are apt to be smeared with it. If applied in the right way, and at the right time, it will hardly be noticed on the foliage, and none will be observable on the fruit when it is ripe. Of course the plants are never syringed after the sulphur is applied. I have forced from 600 to 700 plants of Black Prince every season for the past fourteen years, and have always had bright, clean fruit of good size. Prince of Wales is another sort that is subject to mildew, and may be cured in the same way. It never touches Héricart de Thury. With us the Black Prince is one of the best early forcers, and is ten days or more earlier than Héricart de Thury. J. S. W.

Strawberry Forcing in Pots.—My first Strawberries, consisting of Vicomtesse Héricart de Thury, are now swelling rapidly. I

examined them on St. Valentine's Day, and found on each plant from twenty to thirty fruit, which I shall reduce to a dozen. I can, therefore, with confidence corroborate all that Mr. Tillery says (p. 146) in favour of this variety.—R. GILBERT, *Burghley*.

Pine Houses.—The quotation Mr. Simpson makes, from what I wrote in THE GARDEN (p. 60, 1876) was in reference to amateur gardeners' glass houses, who are not supposed to grow Pines, and on that account I intentionally there omitted to mention them in any way. The article he thus refers to has nothing to do with the present question.—T. BAINES.

THE KITCHEN GARDEN.

Early Asparagus.—Good examples of blanched French Asparagus are now offered for sale in Covent Garden Market. They show a great improvement on the English-grown Asparagus offered for sale there a few days ago.—S.

Potatoes for Amateurs.—The list of Potatoes quoted (p. 151) as being suitable for amateurs for ordinary garden cultivation, includes nine kinds, three of which I should strongly object to recommend; but still that is not so bad as a list of fifteen kinds of Peas, especially as most amateur gardeners are limited to a space of from one-eighth to one-fourth of an acre in extent. In a list of Potatoes suitable for a small garden, I should not include coarse-growing kinds such as Victoria or Magnum Bonum, because these want more space than amateurs can generally afford; further than that they want fairly early kinds, in order that they may get the ground cleared in time to get in a winter crop of some sort to succeed the Potatoes. A few Ashleaf Kidneys should always be planted, and these should be followed by Early Union and Early Rose, then Snowflake, King of Potatoes, and Vermont Beauty; these are ample for the purpose, and are a good selection. If only three kinds are wanted, the first, third, and fifth will be the best to be had. It is not correct to say that the Old Handsworth Early and Porter's Excelsior are identical; there is no intimate connection between them; Porter's Excelsior is a larger cropper, and a far superior Potatoe to the Old Handsworth.—A. D.

Climax Potato.—In his complaint (p. 151) as to the quality of this Potato "J. D. H." realises one of the difficulties that beset those who are invited to advise as to the best kinds of Potatoes for certain soils. Under ordinary circumstances Climax may be regarded as one of the best of the American sorts, and ought to be good where Victorias, Regents, Snowflakes, &c., are good. That it is not so is difficult to explain, except on the supposition that the disease destroyed the haulm some time before the tubers were matured, and hence their watery character. That such a result has fallen to many kinds that are generally good I have this winter abundance of evidence, and no doubt many good kinds are being condemned for this very reason. Nothing is more probable than this; if the plant is practically killed before the tubers are more than three parts ripened their quality must suffer. "J. D. H." should not have made such a complete change in his chief crop at once. It would have been better to have obtained smaller quantities of some half dozen kinds, and then to have grown on the one that proved the best. For next season's growth I would advise that some of Climax be again planted, and also some of Snowflake, Schoolmaster, Dawes' Matchless, Magnum Bonum, and King of Potatoes. These are all good, dry eating, mealy kinds, and large croppers, white skins, and should do well in any fairly good soil. Climax, Snowflake, and King of Potatoes, should be planted in rows 30 in. apart, and Magnum Bonum, Schoolmaster, and Dawes' Matchless in rows 36 in. apart. If none of these kinds will give satisfaction, then, I fear, the soil in question must be utterly valueless for Potato culture.—A. D.

Boxes for Early Peas.—Seeing that "A. D." (p. 151) advocates the use of boxes for early Peas, allow me to say that for several years I have used boxes for that purpose, 3 ft. 6 in. long, 10 in. wide and 6 in. deep. The bottoms are separate, and are kept in their places by means of two pieces of tar-cord round each box. When the time comes for planting, trenches are made, the boxes are placed in them and the cords are untied; the bottoms are then gently withdrawn, the frames are removed, and the earth is pressed round the Peas; if these operations be all carefully performed, the Peas never seem to feel the transition, and succeed admirably. At present I have a number of these boxes sown with Peas under the stage of a greenhouse, and they will after a time be placed in a cold frame. In the summer the boxes come in usefully for flower seeds, &c. The advantages of having the boxes large are, that the Peas can remain in them a long time if the weather be unfavourable for planting.—J. J.

STORING ICE.

I HAVE nothing to add to Mr. Dennis's description (p. 59) of a well-constructed icehouse, though I should apprehend some danger from the drain, which ought not to have direct communication with the ice, but should be a trap drain or a common drain itself well stuffed with hay, through which the melted ice could percolate. I have had to do with some very scientific kinds of icehouses in my time, but I always found that elaborate structures were needless, and often useless; and that a rough and ready method of storing ice was the best. One method of ensuring thorough drainage is to place an old cart wheel at the bottom covered with straw. Lining the icehouse or ice well, too, with straw, is important, but this is too often done in an ineffectual manner. It is useless to place straw untied or in a loose manner between the ice and the walls, a seemingly large quantity of loose straw lies in a comparatively small space, when jammed by the weight of ice against the wall. Straw linings should be carefully prepared, pressed together as firmly as possible, and tied with three bands, as shown in fig. 2, with the ends even. Applied in this form the straw lining may be made nearly as compact as the masonry. In this way it not only becomes a powerful non-conductor of heat, but, by its symmetry and straightness, becomes a kind of internal thatch, carrying down to the well all moisture with which it comes in contact, only, if the icehouse should be of

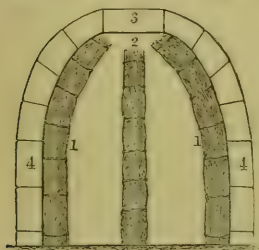


Fig. 1.—Straw lining: 1, central straw column; 2, central straw column; 3, aperture; 4, masonry.

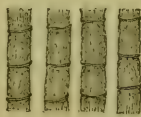


Fig. 2.—Bundles of straw.

large dimensions, I would carry a column of these straw bundles right up through the centre of the ice, one on the other, from the top to bottom, chimney fashion. This will ensure drainage from the centre.

Icehouses should be constructed as near the water as possible from which the ice is to be obtained, certainly not in the pleasure grounds, as filling such houses is often rough work, but, wherever they are placed, let as much of the house be underground as possible, provided the drainage is efficient. The north side of a knoll or steep bank, accessible from other points, is a fit situation; in such a position, after as much ice as possible has been introduced by the doorway, and the latter is closed up, tons of ice can be introduced through the aperture at the top till the house is completely filled. This filling in the house from the top is important, and, where a natural brow does not exist, one may easily be formed, the material excavated from the icehouse going a long way to accomplish this. Never be in a hurry to shut up the house the day on which it is filled if it be during frost, especially such a frost as that which we have experienced this winter; on the contrary, let the frost get to it. And why should we pound and almost grind our ice when filling the house? What do we gain by it? "It lies close" says some one. I have no doubt if ice could be packed or built up in layers, as formed, it would not waste away so soon. Wenham Lake ice comes to us in solid blocks. However, by the following method masses of ice, whether in houses or pits, may be converted into nearly solid blocks, and the quantity of ice doubled.

I once had charge of what we called the ice-hole. This was on the steep north side of a large mound, covered with trees. The mound was formed of the excavations of some fish tanks (a series of which were close by). On the north side of this mound, as stated, the ice-hole was formed; yards below the bottom level ran a brook, into which the drainage ran, and so

well did the ice keep in this cold hole, with its walls of clay that there was scarcely over any drainage at all, it was always ice; the inside was straw-lined in the usual manner, and faggots of brushwood were laid at the bottom. The ice was close by, and of course the water also, and about a yard of ice (in height) was filled in, water was run in till level with the ice; this was quickly converted into ice, and the process was continued till the place was full. This mass of ice was not covered over sometimes for weeks after being put together, but was there freezing away till a thaw or change was anticipated.

The person to whom this hole belonged, spent hundreds of pounds in experimenting with icehouses, but they were all too scientific. The last whim was a kind of round tower, wholly above ground, with a kind of casing of straw at some distance from the ice, thus enclosing a body of warm air around the building, but it never secured a pound of ice.

Ormskirk.

THOMAS WILLIAMS.

Outdoor Camellias.—Our Camellias out-of-doors here are in the same condition as those at Linton Park (p. 144). Were I asked what shrub has withstood the severe winter which we have had best? I would answer the Camellia, a fact of which we have ample illustration in the intensely green leaves and fairly-developed flower buds with which our plants are loaded. I have just been examining them to-day, and I think I never saw them look so green and healthy. I quite agree with Mr. Groom that the "Camellia might be planted out-of-doors in many places much more extensively than it is." I am of opinion that it would succeed perfectly in any county in the United Kingdom, provided it was planted in a position fully exposed to the sun throughout the summer.—CAMBERIAN.

Lean-to and Span-roofed Houses.—This is a subject on which I have lately bestowed much thought, and it is one, too, on which I have had considerable experience. If I wanted to grow stove or greenhouse plants for show I should have a span-roofed house running from north to south, for the sake of equal light; but if I wanted a house for Orchids I should have a wall built east and west, and a lean-to erected on the north for cool Orchids, and one on the south for Cattleyas and Dendrobies, having the pathways near the wall, and the stage near the glass. Thus the plants in pots would have the benefit of the span-roofed house, and I should have the wall on which to hang those on blocks. There they could be syringed without damping others, and, as they require more watering than those in pots, it would be the best place for them, and the whole house could get the benefit of the moisture given off by the wall. The old Begonia house at Kew was a half-span-roofed structure, having a south aspect, and a high back wall. There the plants grew vigorously, while in the new house, a span-roofed one, they have not grown half so freely. The old house that was on the south wall of the museum, at the bottom of the herbaceous grounds, was a lean-to; there stove plants grew splendidly, and so did the Cocoa-nut Palm, while in the Palm house the latter died. I had charge of the old house (No. 19 to the north of the then Grass department; that was a lean-to, and these Palms grew most satisfactorily; it had originally been used as a Cactus house, and there Cacti grew better than they have ever done since. I have had these plants in lean-to and also in span-roofed houses, and I find them to be more easily managed in the former. I am also acquainted with several places where they are grown, and in every case the lean-to houses contain the healthiest plants.—J. CROUCHER, Sudbury House, Hammersmith.

Germination of Seeds.—Notwithstanding the importance of this subject, there are few matters less understood, and for many kinds of seed a uniform practice is acted upon. No doubt it is right for a great many seeds, but not as regards all. Take, for instance, the common Primrose. I remember, many years ago, an eminent cultivator stating that nothing tried his patience more than waiting for some seeds of this Primrose to come up, and I well believe him. Some years ago, when I was actively employed in trying to multiply varieties of the Primrose for the garden, I found there was no way of getting seedlings up so certainly as by planting the parent plants in a sort of rough shrubby border plentifully overrun with weeds, and only now and then pulling a weed up by the hand, leaving the young plants and the weeds to struggle on together, and when they flowered removing what was good to more suitable quarters, for I was convinced that the presence and shade of the weeds were a great help to the Primrose seed. Some other seeds, no doubt, need the same kind of aid, while others require to remain longer in the earth than we sometimes have patience for. I fear we have yet much to learn in this matter.—A RETIRED GARDENER.

PLATE CLXVIII.

SPOTTED GLOXINIAS.

Drawn by Mrs. DUFFIELD.

WHAT are Spotted Gloxinias? They represent a race of erect-flowering varieties having pale grounds spotted or punctured with chocolate, red, and reddish-brown. The size of the spots, their dispersion over the flower, and their colours vary, but, as will be seen, they are all exquisitely beautiful, and they contrast favourably with the varieties of red, crimson, purple, and other tints with which they are associated. As a rule, striking colours preponderate in Gloxinias, and it is of some value to have these in company with varieties possessing delicate tints. Hence the interest which centres round these newer types. There is no doubt that seed from a good strain of Gloxinias would be certain to produce some varieties more or less of a spotted character.

Seed of Gloxinias should be sown early in spring, so as to allow the plants an opportunity of attaining a sufficient size, in order that they may flower during summer in a way that will exhibit their true character; if sown about the middle of March, they will have the requisite time. The seed should be sown in an ordinary pan with 1 in. of drainage at the bottom, on which place a little Sphagnum. The soil should consist of equal parts of loam, peat, and leaf-soil, all sifted; add to the whole one-sixth its bulk in sand, it being essential to have the material of a loose open character, or the roots of the young seedlings will be injured in transplanting them. Fill the pan with the soil to within $\frac{3}{4}$ in. of the rim, pressing it down moderately firm, then water with a fine-rose, so as to close up the surface, and on this sow the seeds, not too closely, or they will become crowded, and consequently drawn up before they are large enough to pot off; cover very lightly, and place them in a temperature of 65°. As soon as the young plants appear, elevate them close up to the light, screen them from the mid-day sun and supply them with water, giving a little air during the day. When the leaves are 1 in. long, move the plants singly into 3-in. pots, using soil similar to that in which the seeds were sown, and at once replace them near the light, raising the temperature as the days increase in length. By the end of June they will require shifting into 4-in. pots, using the soil without sifting, and they should receive the treatment previously recommended. The best kinds should be marked for propagation, and the inferior ones discarded. When the flowering is over, give them less water, discontinue shading, and admit more air, so as to ripen the growth. When the leaves have died down, the soil must be allowed to become quite dry, and be kept for the winter in a temperature of 50°; cooler than this is not safe for any length of time. They generally winter best when the bulbs are allowed to remain in the soil and pots in which they have been grown; but as they become large and are in pots of a considerable size, this is not always convenient, in which case they should be stored in paper bags filled with dry sand, to preserve them from the air, otherwise they shrivel, and thereby receive serious injury.

To give a succession of flowers through the summer, a portion of the plants may be started about the middle of February, and a further supply in March; let the pots be proportionate to the size of the tubers—7 in. in diameter will be large enough for the second season. In potting just leave the crowns of the tubers on a level with the surface of the soil, and immediately they are potted place them in a temperature of 60° at night, and 55° or 10° warmer by day; if not put in heat as soon as potted the roots will rot; the soil ought to be in a slightly moist state when used, and little water should be given until growth has commenced. Treat them throughout the season as recommended for the previous summer as to heat, shade, air, light, and moisture. As already pointed out, their satisfactory flowering will depend upon their receiving abundance of light; a shelf over a path within a few inches of the roof is the best place for them, for in such a situation not only do they get the requisite amount of light, but they also receive more air, both being so essential to short, sturdy growth. This summer they will bloom well and increase considerably in the size of their roots, yet it is in the

third and fourth years after sowing that they will make the finest display.

When the bulbs get large they may be divided, retaining to each portion some of the buds with which the crown is furnished; but the most general method of propagation, and by far the most expeditious, is by leaf cuttings. If the leaves be taken off in the summer when fully matured with a portion of the leaf stalks, and this portion be inserted in 6-in. pots, drained and filled with half peat or loam and sand, with $\frac{1}{2}$ in. of sand on the top, and kept in a brisk heat, slightly shaded, and the soil moist, they will form healthy bulbs before autumn, or, if the variety that is to be increased be scarce, several may be produced from single leaves by cutting through the midrib on the under side in four or five places, and laying the leaves flat down on the soil in pots or pans, prepared as above, but sufficiently wide to admit of their being so placed; over each place, where the midrib has been severed, secure the cut parts on the soil with a pebble about the size of a cockle, at which points bulbs will be formed, which, when the top has decayed in the autumn will require to be wintered, and afterwards grown on in every way as recommended for the plants raised from seed.

Gloxinias are very valuable for decorating the stove or intermediate house in the summer season, continuing to bloom more or less for a considerable period. The flowers are very useful for cutting, and if placed in water they will last for several days, provided the plants have made their growth and produced their blooms in a thoroughly light situation, with the requisite amount of air to impart a sufficient substance to them, the latter an indispensable condition when they are required to be used in a cut state. The ability that the flowers of most stove plants possess to enable them to keep well when cut for vases, &c., generally depends materially upon the way the plants have been previously managed, but there are few so much dependent in this respect as are Gloxinias, the whole character of the plant being so much changed for better or worse, according to the conditions of cultivation. When well grown the leaves are stout and short, borne on stout foot stalks, with the flowers standing up well above the foliage; whereas, if grown either too moist or too hot, with insufficient light, the whole plant has a soft, flabby, straggling appearance that effectually destroys its beauty and shortens the duration of its blooming. By using a sufficient number of plants, and bringing them on at different times, a succession of flowers may be kept up from April until the end of September.

The varieties figured in our plate were from the collection of Messrs. Veitch & Sons, Exotic Nursery, Chelsea; their names are Nimbe céleste, Charme de Lutice, Irene, William Robinson, and Ami Thibaut.

Floral Committee Certificates.—Certificates, if they are to be of any value to the general public, should be granted with care; if they are marks of superiority, then the plants or florist flowers should be superior to those already in cultivation. If the plant be a fine-foliaged one, it should equal or be superior to those which we previously possessed. My reason for making these remarks is that at the last meeting of the Royal Horticultural Society's Floral Committee, a first-class certificate was awarded to a meagre-looking Palm, in a very undeveloped state, named *Cyphokentia macrocarpa*, which I suppose was thought by a few of the Committee to be worth that distinction. Now, considering we have such Palms as *Calamus*, *Dæmonorops*, *Cocos*, *Arecas*, *Scaevanthias*, *Kentias*, *Phoenix*, *Geonomas*, *Chamædoreas*, *Euterpe*, and others of the graceful type, and *Latanias*, *Livistonas*, *Licualas*, *Stevensonias*, *Verschaffeltias*, *Sabal*, &c., of the noble class, not forgetting *Thrinax* and *Chamærops*, we have great numbers from which to select, and in my opinion care ought to be taken to see that anything new should be in a condition to show its full grace and beauty before it is awarded a certificate, which the plant that I saw at South Kensington the other day failed to do.—J. CROUCHER, *Sudbury House*.

Love-lies-bleeding for Harvest Decoration.—There are few plants that come in more usefully for this than *Amarantus caudatus*, or *Love-lies-bleeding*, and now is the time to get the seed, so that it may not be forgotten when the other annuals are raised. To secure a good supply of plants of it fit for the purpose, early, middle, and late sowings should be made. For our decorations last harvest

the red sort only was used, but a judicious admixture of the white and red sorts might perhaps be made to produce a pleasing effect.—B. S.

THE INDOOR GARDEN.

AN AMATEUR'S GREENHOUSE.

HAVING already given a rough notion of the structure, and of the manner in which I manage to keep out the frost, I would now supplement it by an account of the manner in which I provide for its furnishing, premising that I lay claim to no originality or skill, but simply to the fact of knowing what I wanted, and of a determination to do the best for meeting my wants. Two things I laid down to guide me in filling the house—to have nothing but good plants, for I felt that rubbish and indifferent things take up quite as much space as good ones, and that in making a selection the difference in price is not appreciable between what are recognised as really good plants, and those which, a little cheaper perhaps, are inferior in quality. The second point was to endeavour to have a succession of blooming plants, having especial reference to the earlier months of the year, not filling my house with a collection of any one sort, but having selections of a few of the best of several kinds of plants; and perhaps I may be able to make the matter clearer by giving the state of the house, &c., say during January.

I have kept the two sides of the house distinct, reserving one for hard-wooded, and the other for soft-wooded plants; the small shelf at the end of the house is occupied with four large-sized Camellias—*Mathotiana*, *Sarah Frost*, *Mrs. Cope*, and *Chandleri*. These, alas! will soon, I fear, be too large for the house; and I shall have to do with them as I have frequently had to do with *Azaleas*—exchange them away for smaller plants. *Sarah Frost* I must try to keep, for it is a reminiscence of a pleasant tour made in the middle of France with an ardent horticulturist, no longer with us. Besides these, I have eighteen others, smaller plants, consisting of *Lavinia Maggi*, *L. M. rosea*, *Valtoaredo*, *Mrs. Abbey Wilder*, *Montironi*, three or four of *alba plena*, *imbricata*, *Henri Favre*, *Countess of Derby*, *fiabariata*, *Eugénie de Massena*, and *Jubilee*. These seldom fail to give an abundance of blooms, and I never put them out-of-doors. When they have done blooming, I remove them to the lower house, stand them under the shade of the Vines, and leave them there all the summer. They like the shade, and, although it is not so good for the Vines, yet this is a secondary point with me. I am aware that most people place them out-of-doors, and where there is a careful person to see to the watering, that is all very well; but my experience in past years was that they were neglected, and, as no plants are so long in hanging out signals of distress in this matter, it was often not until the buds began to drop off that I found out the mischief that had been done, whereas in the house, even should the watering be neglected for a day or two there are no scorching rays of the sun to dry up the roots and injure the blooming.

To follow the Camellias I have about two dozen *Azaleas*—of course smallish plants, but large enough for me to be able to cut plenty of bloom from for vases or baskets for the house. Here again I have taken care to have good sorts, such as *Flag of Truce*, *Fascination*, *Gem*, *Grand Duchesse de Bade*, *Iveryana*, *Vesuvius*, *Stella*, *Madame Van Houtte*, *Duchess of Beaufort*, *Apollon*, *Sigismund Rucher*, &c. As they increase in size more rapidly than the Camellias, they have more frequently to be changed, and I would strongly advise those who wish to grow only a few to select the later-raised Belgian varieties. There can be no comparison between them and the older sorts, the flowers are so much larger, and the plants so much more floriferous. Here again, also, I adopt the plan of never putting them out-of-doors. They take their place along with the Camellias in the lower house, and until this year I have never seen any trips upon frost; but this year, owing, I imagine, to the long-continued frost, and my being compelled to keep up fire-heat, it has invaded me and become troublesome; I hope, however, to get rid of it by some of the numerous insecticides of which we hear so much. Along with these I have a few, and only a few, other hard-wooded plants—*Libonia*

floribunda, which, however, requires a little more heat than I can give it, I fancy; a few of the hardier *Heaths*, *Genetyllis*, &c. On the other side of the house I have at present some largeish plants of zonal *Pelargoniums*, which gave me more bloom than anything else during the winter months, some of Mr. Pearson's pink-flowered varieties being especially noticeable for this purpose. I am aware that a more even and higher temperature would suit them better, but I must be contented with what I can get, and all through the long and dreary time I have had from one to two dozen trusses of bloom. Besides these, I have about a dozen plants of *Cyclamen*, three or four *Tropæolums*, which will be very gay by-and-by; some pots of *Lachenalia pendula* and *tricolor*, which are very bright; some also of the pretty little white Roman *Hyacinth*; and some three or four dozen of show *Pelargoniums*, which are now in smallish pots, but which will be shifted by-and-by so as to give them more space to grow, and to fill up vacancies when some of the above-named are done flowering. *Cinerarias* I do not attempt, for I find that the temperature is not even enough for them, and experience has taught me that it is better to grow what will really do well than to be attempting things which only end in disappointment and vexation of spirit. I have a few pots also of *Primula cortusoides amœna*, which come in very usefully for cutting.

Such is the present aspect of the house; but I must prepare for its future gaiety as well as for the present, so I have just taken out of their winter quarters, where they have been covered up with leaves, and have started well, about seventy *Hyacinths*; these will be brought into the house in succession, and will make it quite gay and fragrant. In the lower house there are some pots of *Lilies*, *Vallotas*, *Calochorti*, *Ixias*, *Babianas*, and *Tritonias*, which will in turn take their place in the upper house; while there are also some two dozen *Fuchsias* and some tuberous-rooted *Begonias* for the later summer and autumn blooming. I reserve the lower house in autumn for *Chrysanthemums*, which afford such a fine variety of cut blooms in the dreary months of November and December.

In thus detailing the contents of my greenhouse, I must utterly disclaim all idea of doing anything in a super-excellent way. Of course great gardeners would laugh at my efforts, although I may say I have seen Camellias in many a big house not half so healthy as mine; they would find fault with the shape and size of my plants, and think that I had indeed made mountains of molehills, and magnified my gress into swans. But I have the satisfaction that it pleases myself and my friends. It must be borne in mind that I have no regular gardener, and that I have either to do or superintend the work myself—I cannot tell this man or that to do what I want, and that, in consequence, all failures must be laid to my own door; but I may say there is hardly a time when a gardener may pay me a visit but that I can show him something that he will be pleased to see, and something which is very probably new to him, although it is one of the disadvantages of living in a country place that so few do come. Nothing is more pleasant to a horticulturist than to be able to talk about, with one who loves the same pursuits, the things that are very dear to him, and to recognise that true brotherhood which art of whatever kind ought to bring; and my hope in giving this short account of my experience is, that I may be able to encourage someone who, like myself, has to fight against difficulties, and to whom it will be a pleasure to overcome them. DELTA.

CHRISTMAS ROSES IN POTS.

I THINK it is a mistake to report these every year when they are wanted for flowering in pots. A gardener who has to provide a supply of flowers all through the winter, told me a few days ago he could not get on with his Christmas Roses, they would not flower, and he further said he should have to give up their culture altogether; and yet what charming and useful plants they are early in the year! and how acceptable they are when blossoms are scarce! I have now growing in a cold house a half-dozen plants in forty-eight pots, that were forced into bloom in a Pine stove a year ago, being put on a shelf close under the glass. I put the plants in a cold frame by way of hardening them off, and then placed them out-of-doors for the summer and autumn on an ash bed with other plants. At the end of October they began to show signs of throwing up their flower stems. The

plants were put under cover during frost, and they are now blooming with remarkable freedom. They have not been shifted, and all the stimulants they are receiving is a slight occasional surface-dressing with Clay's Fertiliser, which is washed into the soil when water is applied. The flowers are large, numerous, and of an almost snowy whiteness. I am in favour of confining the roots in a somewhat small space; in keeping the plants growing freely during the summer, as allowing them to take all kinds of weather during the time they are in the open air, of not shifting oftener than once in two or three years, and in applying some stimulants at the time of flowering. There are, no doubt, different strains of Christmas Roses, one being of greater freedom than the other in the way of producing flowers. I need scarcely state this is the variety or strain to be chosen by those growing in pots for flowers. If a few crowns of this form can be got, let them be divided and potted up into pots, just sufficiently large, and grown on into a size for forcing, giving one more shift into the blooming pots when requisite. Probably the best plan would be to bloom for two years in succession, or not more than three, and then plant out for one year for a thorough rest, potted up for further service a year after. These roots, when lifted, can be reduced a little by taking off a few of the outside crowns for stock, so as to reduce the roots to suit the size of the pots. There should be only sufficient space to put between the roots and the sides of the pots some good yellow loam. In planting out the single crowns for stock they should be put in a like compost, and of sufficient depth to enable them to root well into it. In this matter plants fit for flowering early under glass are provided, and with a little care and forethought a sure and most acceptable contribution of cut flowers can be had at a time when their market value ranks at the highest.

D.

TREATMENT OF CYCLAMENS AFTER FLOWERING.

MANY who grow Cyclamens are at a loss to know what to do with them after they have done flowering, and the complaint is often made that when the growing season arrives they fail to make any satisfactory progress. When the Cyclamen has finished its allotted work, which will be by the middle of May, it will need a period of rest; but this rest must be a natural one; the bulb must go to sleep, as it were, in the manner in which Nature has ordained that it should do, and those who suddenly withhold water and dry off the foliage quickly will only have themselves to blame when they find their bulbs wholly inadequate to the work which they are expected to do. What would be the result if we were to cut off the supply of moisture from a deciduous tree when ripening its wood? No death, perhaps, but certainly a ruined constitution. And yet bulbous-rooted plants are often treated as if they had no tissues to perfect; they are forced into a state of rest long before their time, and are then expected to come up to the mark in a hearty, vigorous manner when called upon to do so. A moment's reflection will convince any one how strongly opposed to reason such treatment must be. In the case of the Cyclamen the utmost care should be taken to preserve the foliage in a healthy state when taken out of the conservatory. The plants should be placed in a north frame, or in the partial shade of trees, where they are sheltered from scorching sun, harsh winds, and heavy rains. Water carefully, letting the soil dry out between each watering; the leaves will then die away gradually, but if some of them remain green and healthy it will not matter, as I have found them to flower just as well as when the foliage dies entirely away. As soon as the bulbs are well at rest, which they will be by the end of July, turn them out of the pots, shake away all the old earth, and plant them in a bed of light soil in the open air. Do not let them remain at all dry, but water them freely and they will start much stronger than when kept in pots. By the end of September they will have started into growth, and will be furnished with a quantity of healthy fibre. They may then be potted in a light, free, well-sanded compost, and then be placed in a cold frame, merely protecting them from heavy rains and frost. By the latter end of October they may be placed in a light greenhouse, where they will come into flower early in the year. These old bulbs do not flower quite so early as those grown from seed in a single season, but they make an effective display in the early spring months, and the neat habit and graceful appearance which distinguish the Cyclamen, place it in the first rank of winter and spring flowering plants.

J. CORNHILL.

THE ORIGINAL OAK-LEAF PELARGONIUM.

I WONDER what has become of this once highly-valued plant? Does it still survive in the window of some remote cottage or farm-house, where the pot of a former generation is still cherished by the old-fashioned inmates, like the once fashionable pigtail that might have been seen reclining on the coat collar of an aged shipkeeper thirty-

five years ago? It was about that period that I lost the last specimen that I ever saw of this plant, and I little thought at the time that I might never be able to replace it. If it still exists the following description will enable any one to identify it. Like all its successors, it produced the same kind of small unobtrusive blossom that they have, but the form, colour, and texture of the leaf were peculiar. It resembled an Oak leaf in size and shape. When fully developed, it had a dark mark running its entire length, and being somewhat glutinous to the touch it left on the finger a powerful and agreeable perfume. My recollections of the plant lead me to think that its leaves grew more in clusters than is the habit of the sorts now in cultivation. I have seen many of the so-called Oak-leaf Pelargoniums, but not one of them had the peculiar characteristics of the original.

B. S.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Large Poinsettias.—The fine Poinsettias exhibited at South Kensington on the 11th inst. by Mr. Parr, of Harrow Weald Park, were struck at the end of July or early in August from cuttings taken from old plants which had been placed out-of-doors in June to harden. The cuttings were put singly in 2½-in. pots, and, when properly rooted, shifted into 6-in. pots, placed near the glass, and kept in a temperature of from 55° to 60°. By these means flowers of superior colour and quality may be had till nearly the end of February.

Chinese Primulas Damping off.—If the Primulas mentioned by "K. T." (p. 152) are old plants, that is, of more than one season's growth, the damping off of which complaint is made is a common occurrence. It is only with the greatest care that old plants can be kept free from this evil, as even the finest and most robust-looking plants will suddenly collapse and die, rotting off just above the soil. If the complaint relates to yearling plants then it is unusual and inexplicable. The worms alluded to are common in vegetable soils, and are, perhaps, rather the product of vegetable decay than the cause of it. The best soil for Primulas is decomposed turfy loam, some well-rotted manure, plenty of silver sand, and a mixture of broken pieces of charcoal. In such a compost Primulas should thrive well and be healthy. The mildew which attacks the Primula is very insidious in its operation. A flower may be seen to hang loosely on the stem; it may be pulled away, but this does not check the damp, which travels down the stem to the larger truss stem, which it infects with decay. Presently the old stem and truss collapse, and if this be but pulled away the mildew continues to travel down the stem to the plant, and into that also. The same occurrence takes place in the leaves, and in all cases, whether of leaves, stems, or flower stalks, too much care cannot be exercised in removing the decayed portion entirely, and thus prevent its further progress. Damping off at the base of the plant is so unusual with yearling plants that it is rarely found necessary to take any very special precaution with them, but in the case of old plants it is desirable that they should be somewhat elevated in the centre of the soil, sloping it off to the sides of the pot. In repotting these it has been found by such an experienced cultivator as Mr. Gilbert, of Burghley, to work in round the sides a good quantity of small pieces of charcoal, for securing free drainage, and it is of the first importance in all cases that the soil should be thoroughly sweet and porous.—A. D.

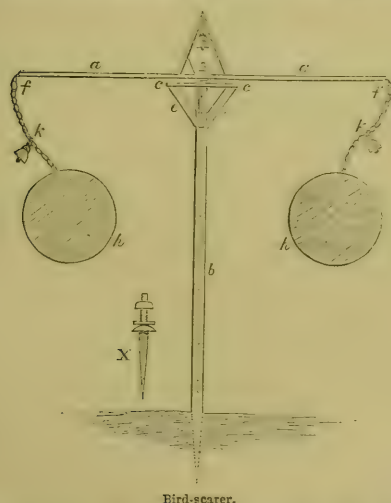
— If "K. T." (p. 152) will break up some charcoal rather finely, and put about a tea-spoonful of it round the base of each Primula she may save those she may have left. I put some round my plants after they had been in flower six weeks. I have had Primulas in full bloom ever since the middle of last September—one batch consisting of about seven dozen, and I have flowers now larger than a crown piece. The white insects of which "K. T." speaks, in my opinion, are the result of a stagnant condition of the soil about the roots, and the reason I think so is this: I have some capital Cyclamens, the drainage of one of which was stopped, and on examining the plants I found the soil full of the small white insects just referred to.—J. H., Bedford.

Portable Greenhouses.—Messrs. Dodds & Robb, of the City Road, have invented a portable greenhouse which promises to be useful where space is limited. It can be made of any size, large or small; it is fitted with stages and side and top ventilators, all of which, together with the lights, can be taken to pieces in a very short time, and reconstructed when and where required.

Bouvardia Vreelandii.—This I find to be one of the best varieties of Bouvardia for blooming in midwinter.—CAMBRIAN.

BIRD-SCARERS.

CROPS in kitchen gardens, situated near woods, are always liable to be injured by birds; in such places, therefore, bird-scarers of some kind are indispensable. The conventional scarecrow, usually consisting, as is well known, of a stuffed figure impaled upon a stout pole, the whole being crowned with an antique hat, is indisputably useful, but it lacks two important attributes of life—sound and motion. The accompanying woodcut represents a bird-scarer which I have designed and made. It combines both sound and motion, and has been used in a large kitchen garden with good effect. The cross-piece (*a*) is affixed to the centre pole (*b*), so that it will revolve evenly; at the top of the pole the board or table (*c*), with its supports (*e*) must be fastened, in order to make the cross-piece revolve properly. The cross-piece is attached to the pole by means of the pin, ring, and nut shown at (*x*). At each end of the cross-piece is a staple, on which a strong swivel (*f*) is hung. Attached to the swivel at either end are light yet strong chains; at the end of each chain is a circle of light and strong galvanised iron wire, about 13 in. in diameter, tightly covered with some light and stout fabric, such as calico (*h*). The length of the chains must not exceed 18 in. Midway be-



Bird-scarer.

tween the swivel and the circular discs, a sheep-bell (*k*) should be fastened. On the top of the cross-piece a gable framework is erected (as shown in the illustration), from which must be hung another sheep-bell. The height of this bird-scarer should be about 8 ft. 6 in., and it should be placed in an open space in the garden, where seeds are coming up. When the wind catches the circular discs, it at once puts them in motion in all directions, and violently rings the bells, while the oscillation and revolving of the cross-piece, caused by the rapid movements of the discs, also rings the bell in the gable at the same time. The irregular and sudden motions of the discs are caused by the large surface of calico exposed to the breeze. To combine the two kinds of scarecrows, coloured cloths, &c., can be added to the framework.

PERRY T. INGRAM.

Slough.

not always stating where they grow, but how they look in their native places, and some guide given as to the hardness of the southern species.

GARDENING FOR THE WEEK.

Greenhouse.

General Stock.—There is much more difficulty in managing greenhouse plants during such a winter as this than when it is milder, for when the temperature is so low for a number of weeks as to require almost continuous use of fire heat, even when no more is applied than is requisite to preserve the stock in a healthy condition, it always has the effect of exciting some plants to commence growth earlier than they otherwise would do. Hard-wooded plants need to be carefully treated in the matter of water, so as to prevent the soil from getting too dry or, on the other hand, too wet. Although the sun has not yet much power in drying the air, still within the next few weeks it possibly may render the more frequent application of water necessary, and, to ascertain the need for this, the whole of the plants should be examined every other day at least. Whatever tying yet remains to be done should be finished forthwith, as when any great portion of this work is delayed later in the season it interferes with the ordinary routine of other operations that in their turn come round. If any plants happen to be affected with brown scale they ought at once to be well washed with a moderately strong solution of insecticide. This also will not admit of being deferred, for if not done before the flower buds begin to move they are almost certain to be injured; this is especially the case with such plants as *Boronia serrulata*, *Eriostemon*, *Chorozemas*, *Croweas*, *Myrtles*, *Neriums*, and *Pimeleas*, on all of which brown scale will live and increase, though it does not thrive upon them so fast as on plants of a more succulent character. Its presence is easily detected by the dirty black deposit which it leaves on the foliage, and which, if allowed to remain, does more injury than the extraction of the sap on which the scale subsists. After syringing, before the foliage gets dry, it should be gone over and well sponged, for although the leaves of plants like these are too small to treat in this way individually, much of the dirty matter may be thus removed.

Plants for Succession.—Nothing connected with the management of a garden requires more consideration than due calculation, with a view to keep up a continuous supply of flowering plants. Without this, however ample the means at command, there is sure to be sometimes a much greater quantity of bloom than is wanted, with corresponding deficiencies at other times. If anything, the knowledge and observation necessary to successfully retard the flowering of plants is greater than that requisite to accelerate their blooming. Where no better structures for accommodating the collection of plants grown exist, than the old-fashioned lean-to house facing the south, it is a difficult matter to retard plants, as on houses of this description the sun, from the time of its getting much increase of power, exerts its full influence in raising the temperature, while for the next six or eight weeks the wind is frequently so cold, that to admit air sufficient to keep down the heat often existing through the middle of the day, would be to inflict serious injury upon many plants which are even making no leaf growth, and with nothing but their old mature foliage on them. It may be necessary to impress on all who attempt to keep back a certain portion of their stock of *Cinerarias*, *Calceolarias*, *Primulas*, and similar soft-growing subjects, and still more hard-wooded plants of such a nature as *Camellias*, *Azaleas*, late flowering *Epacris* and the like, that whatever is done to delay their time of blooming, should always be carried out before the flower-buds are much developed, as anything done by means of a lower temperature when they are near their opening period, is certain to interfere with their quality. Where there happens to be a lean-to house or roomy pit with an east, west, or, still better, north aspect, it will be found to be the greatest boon to those on whom the responsibility rests of keeping up at all times a considerable supply of flowers. If a few *Camellias*, *Azaleas*, *Acacias*, *Cytisus*, and *Epacris*—selecting those plants that were the latest to flower and make their growth last year—are at once removed to a place of the description above named, they will come into bloom several weeks after those that are located in structures more fully exposed to sunshine. A portion of all the soft-wooded subjects already spoken of, in their case choosing those that were the latest raised from cuttings or seed, will be alike useful. I may here observe, that although light is at all times of great importance to the well-being of plants, still, now, for some weeks, with subjects like the above, where little leaf growth is being made, the absence of as much of it as they would receive in structures more directly under the influence of the sun, will not have a like injurious effect, as it

"Meehan's Native Flowers and Ferns of the United States."—We have received a fresh instalment of this book. The character of the plates is well kept up; if anything, indeed, they improve. The printing, paper, &c., are the most satisfactory which we have ever seen in a book of the kind. Every lover of hardy plants must wish success to this important work. What we should like to see is a little more about the native localities of the plants,

would when active growth was going on. At the same time they should be so placed whilst here, that they will get the maximum amount of light afforded by the situation.

Camellias.—The earliest flowered plants of these that are now done blooming and that are commencing to make their growth must be encouraged by putting them where they can receive the requisite amount of warmth and a moist atmosphere. By accelerating their shoot growth, and the formation and development of their flower buds, they may be so managed with a sufficient stock to come on in succession as to be had in flower for nine or ten months in the year; but as no forcing can, with anything like a reasonable chance of success, be carried out in their case, it is in the early growth of some and keeping it back in others that their time of blooming can in this way be regulated.

Lapagerias.—Where trained examples of both the red and white Lapagerias are grown, they should at once be repotted, if they require it. For the first few years after being raised from cuttings or layers they are very slow growers, and must not be over-potted; but when they have attained considerable strength, they require more root room than many plants, otherwise they will not keep on forming their annual sucker-like shoots from the root of increased strength. Wanting, as they do, more water than the majority of plants, the pots in which they are grown must be well drained; good fibrous peat alone, with a little sand, is the most suitable soil for them. They are so effective for conservatory decoration, producing their flowers in long succession that they are well deserving of pot culture, as well as the more ordinary method of being planted out. They look well and show their flowers to advantage when trained on umbrella-shaped trellises. One point in favour of pot culture is that it admits of their being moved about from one house to another at different seasons of the year, when their requirements, as regards non-exposure to the direct influence of the sun through the spring and summer, whilst their growth is being made, can be better provided for than when in a fixed position.

Plumbago capensis.—The different purposes to which this fine plant can be turned are such as to make it deserving of being grown in quantity wherever there is room. In no way is it more useful than in small, say 6-in. pots, for associating with whatever happens to be in flower through the late summer and autumn. Plants cut back now and placed in a little warmth will, in a few weeks, produce growths which, when 3 in. or 4 in. long, can be taken off with a heel; they will root soon if accommodated with sufficient warmth. Examples that flowered last autumn, and that were then cut back and kept on growing slowly through the winter, may be at once repotted if they require more root room, but of the latter they do not need so much as many plants. Ordinary loam, a little sand and rotten manure, are all they want. If, after potting, they are kept in an atmosphere slightly close they will directly make growth that will flower before those allowed to come on slower.

Croweas.—These rank amongst the most serviceable autumn-flowering hard-wooded plants which we possess. If grown to a medium size in 8-in. or 10-in. pots few plants are more useful in conservatories late in summer, when flowers are scarce; but in order to have them in bloom before the autumn is far advanced they require special treatment, as they take more time to make growth and open their flowers than most plants that bloom from the current season's shoots. To effect this it is necessary to start them about this time in an intermediate temperature, first cutting them in to the extent of some two-thirds of last summer's growth.

Monochetums.—These Melastomads, though profuse winter bloomers, are not well adapted for cutting on account of the disposition which the flowers have to fall quickly. The little room which they occupy, blooming as they do as freely from twelve months struck plants in 6-in. pots, as those larger in size, renders them acceptable additions to the conservatory or warm greenhouse during winter and early spring. Where stock is wanted, if a small plant or two be now cut back, whether it has flowered or not, and put into an ordinary stove or intermediate house temperature, they will, in a few weeks, produce plenty of cuttings, which, taken off, and struck thus early, will furnish a supply for next winter.

Show and Fancy Pelargoniums.—These will now be making more growth, to encourage which, the night temperature should not be allowed to fall much below 45°, giving air on every fine day, still keeping the plants well elevated up to the roof glass, and setting them sufficiently far apart to prevent the under leaves being deficient of light. Whatever stocks and ties are needed for support, and to keep the branches open, should be at once supplied. Examine such plants as these, and also Cinerarias, Calceolarias, Tree Carnations, and everything else liable to become infested with aphides; and as soon

as any trace of these can be found, immediately either dip or fumigate. If these troublesome pests be not allowed to get much hold of the plants through the spring, they are easier to deal with than they otherwise would be.

Lilies.—Where considerable numbers of these are grown in pots, especially of *L. auratum*, their time of blooming will be so different under the same treatment, as to make them the most useful subjects for conservatory decoration that can well be cultivated; differing as they do in natural habit from that of most other plants with which they are thus associated, they are always an acceptable addition to whatever else may be in bloom. The various forms of *Lilium speciosum*, including *L. punctatum*, *L. album*, and *L. rubrum* will generally come on in succession. Pots of all the above, and many others similarly grown that are stowed away, must be carefully looked after, with a view to their being removed to a good light position, as soon as ever the shoots appear through the soil, for if allowed to remain even for a short time after they have commenced growth where they do not receive enough light, their stems will be drawn up in a way that no after treatment during the season can rectify.

Cinerarias.—At no time are these more serviceable than at the commencement of the year; but as they will not bear forcing, there is no means of having them blooming then but by early sowing. A little seed may now be put in.

Agapanthus umbellatus.—The different varieties of this fine old-fashioned plant are not nearly so generally grown as might be; they will bear rougher usage than most plants, without suffering to any appreciable extent. Their adaptability for standing, either in or out of flower, in porches, verandahs, or similar places about dwellings is not surpassed by any plants in cultivation. They will live and thrive with their crowns and roots so crowded in the pots as would prevent most plants making any progress; but though capable of bearing this treatment for a long time, they do correspondingly better with a fair amount of room. Any that have got too large may now be divided, cutting them into four parts, and putting them in pots that will afford sufficient room for a couple of years. By dividing them thus early, and at once placing them in a greenhouse temperature, where the roots will immediately begin to recover from the injury which they unavoidably receive during division, there will be less check to the season's growth than if the operation were deferred till later in the season.—T. BAINES.

Flower Garden.

Auriculas.—Although the weather still continues to be rather cold, Auriculas are making new growth very freely, and the rising trusses begin to demand attention, as well as watering and airing, for, unless air be judiciously admitted the flower stalks will not be stiff and elastic, and, on the other hand, exposure to a cold wind will cause the flowers to be cupped, whereas the tips ought to open out quite flat. Then it is not so easy to tell which plants require water and which do not, owing to the surface dressing deceiving the operator; increased attention in reference to this is therefore necessary. In ventilating the frame light should be tilted against the wind.

Carnations and Picotees.—Now that the weather is fine plants in beds should be looked over, the surface should be stirred with a pointed stick if it be wet, and in a day or two, if no rain falls, it will soon become dry. Make any plants firm that are loose, and where plants have died during the winter their places must be made good from reserves in pots. Plants in pots remain quiet as yet, but they will soon start into active growth, when they must be potted. When this takes place, to insure healthy, stocky growth, see that the lights are removed on all favourable occasions. It is now a good time to take cuttings of the perpetual-flowering sorts; the small side growths very speedily form roots if planted in small pots in fine sandy soil, placing the pots in a hotbed or forcing house. A correspondent asks for six of the best for flowering in winter; they are:—Alegazier, bright scarlet; Annie Williams, pink; La Belle, pure white; Miss Jolliffe, pale pink; Proserpine, scarlet; Rose Perfection, bright rose.

Dahlias.—It was stated last week that young plants, when rooted, were to be removed into a house where more air could be admitted than would be desirable for unrooted cuttings. This is preparatory to potting them into larger pots, which must be done as soon as the plants have, by their growth, shown that they are well rooted.

Hollyhocks.—The same remarks apply to these, as far as regards potting. Of course it is well known that these are much harder than Dahlias, and that they do not suffer even if frosts are admitted to the frames. It would not, however, be well to subject them to so

low a temperature; after being previously propagated in a warm house they must be gradually inured to stand a lower temperature.

Pansies in Pots.—These are now making good growth, and early flowers would, doubtless, open well, if we had genial weather and a little sunshine, which we do not yet obtain. It is necessary to examine the plants every night with lamp light, in order to destroy slugs, and if even one aphid were to be seen on a plant, I would have the frame fanigated with Tobacco smoke. This ought to be done as a preventive before the plants are in full bloom. Such plants appear to most advantage when placed on a neat stage near the glass.

Primula cortusoides.—This, and all allied species in cold frames are now starting freely into growth, and a few of the plants should be removed into a warm greenhouse and, if possible, be placed close to the glass; there they will flower considerably earlier than those in cold frames. The pretty little *P. nivalis* with its dense tufts of delicate white flowers, *P. denticulata*, and others, require very similar treatment to that recommended for Auriculas and Polyanthus.

Phloxes in Pots.—Ours are starting very freely, but we did not put the plants into a greenhouse, and the growths are not yet sufficiently advanced to be taken off for cuttings. It is now time they were put in if a good bloom is to be expected at the end of the summer. Ours will be planted out as soon as the cuttings are taken off. If they were intended to flower in pots they should now be potted into 8 in. pots in rich soil.

Tulips.—The ground with us is very wet, and one can imagine what it is about Manchester and other parts of Lancashire and Yorkshire where the choicest Tulips are grown. It will be unnecessary to protect ours at present, but it would be folly to advise the fanciers to trust theirs to the frost at night. I recommend glass lights, as being far superior to coverings of thick felt or canvas of any sort, as protectors.—J. DOUGLAS.

Hardy Fruit.

Though the long-desired thaw has taken place, the succeeding wet weather has, as yet, prevented much progress being made; but we must, nevertheless, persevere, as the buds of many trees are getting very forward, especially those of Apricots, which are swelling perceptibly daily, and another few days of mild weather will induce some of them to expand. It is, therefore, very important that the protecting material should be got in readiness and all nailing or tying be accomplished forthwith. Where there are not proper appliances for protecting fruit trees on walls, such as glass copings and cases, frigi domo, or canvas blinds, a good protector can be made by laying a few poles slantwise against the walls, and fastening to them either hay or straw bands, Birch sprays, Spruce branches, or netting two or three ply thick. Of course, it is just possible that as good crops of fruit may be had without any protection as with it, but then it is a risk, as we can never depend on the weather, so it is better to be on the safe side, and protect the bloom in some way or other. The pruning of Peaches and Nectarines cannot longer be delayed; they are now starting into active growth, and every day's delay will now, in some measure, be injurious, canker and gumming being, as I believe, as much the result of untimely and unskilful pruning as of bad soil and improper drainage. The buds are too far advanced for the trees to have the usual washing or dressing with soapy water or other insecticide, so that, as soon as all nailing or tying has been completed, syringe both walls and trees with soap-suds, with tobacco water added, as a preventive, more especially against black fly, to which Peaches in the early stages of growth are liable. Any bush fruits that are yet unpruned should also have attention. The common mode of pruning these is much to be reprobated; by it nearly all the young growth is annually removed, whereas, if a reasonable amount of young wood were left, and a proportionate amount of old stems and spurs taken off, the fruit would be much finer and the trees would last longer in a vigorous condition. As soon as the ground is suitable, any trees requiring it should be top dressed with fresh loam or manure, and all newly planted trees—without exception—should have a mulching of stable litter, and be staked, to prevent wind-waving, the friction produced by which breaks off new roots as fast as they are formed. The long-continued frost having loosened Strawberry plants, they should now be well pressed into the ground; indeed, the whole bed would be the better for being thoroughly trodden, and well mulched with half-rotted stable manure. Taking fruit trees as a whole, there has not been for some few years been such an abundant prospect, so far as fruit buds are concerned, as there is this season, for, with the exception of a few shrub-bearing Pears, all kinds of fruit trees are literally covered with buds. Provided, therefore, spring frosts and mischievous birds keep off, this may be expected to be the best fruit season which we have had for years past.—W. W.

Kitchen Garden.

Vegetables for some time to come will be very scarce; it will therefore be desirable to anticipate this scarcity by paying extra attention to forced productions in that way. Early Cauliflowers have suffered severely, and it will not do to depend much on them. Asparagus from the open air will be very late, and so will Peas. Autumn planted Cabbages are much injured, and these also cannot be relied on; therefore, no pains should be spared either to produce forced vegetables or to forward early open-air crops, such as Peas, Broad Beans, Carrots, Turnips, Potatoes, Cauliflowers, and Cabbages, all of which may now be safely sown or planted on warm borders. The heavy rainfall that has prevailed ever since thaw set in militates against the accomplishment of seed sowing in general, and though the season is advancing, nothing will be gained by doing it whilst the ground is at all "pasty," but, as soon as practicable, let it be done, especially such crops as Parsnips and Onions, both of which require a long season. Garlic, Shalots, and Potato Onions may now all be planted; Chives and Sorrel may also be dug up, divided, and replanted, as neither of these do so well when allowed to grow in the same spot year after year; the same remark also applies to many kinds of herbs, which should now have their yearly overhauling for the purpose of division, transplanting, manuring the beds, and the like. Jerusalem Artichokes may now be planted; Globe Artichokes should have the protecting material removed from their base, and in lieu they should have a thick mulching of good manure; but first fill up any blanks that the frost may have made with offsets from the strongest stools. If new plantations are to be made, let the ground for them be heavily manured and deeply trenched, and, when planting, allow them plenty of head room. Rhubarb plots will now require their annual dressing, and new plots may be made by lifting a few of the largest roots, and cutting them into single eyes; such roots will produce the finest Rhubarb next season, but none should be pulled from it this season. Myatt's Victoria and Prince Albert are the two best varieties to grow, the latter being the best for forcing. Asparagus beds should now have a slight "pointing" over, but not so deep as to injure the crowns. Salt, guano, and wood ashes are all good manures for Asparagus, and if mixed with fine dry soil, they may be applied to the surface after the "pointing" has been done. It is yet too soon to make new plantations, but the ground for such should be got in readiness; it cannot be made either too deep or too rich. The late frost has so crippled many plantations of Broccoli, Cabbages, and Brussels Sprouts, that it will be advisable to pull them up at once, in order to prepare the ground for other crops, whilst there is, comparatively speaking, leisure for doing so. As soon as the soil is sufficiently dry, crops of Spinach will be much benefited by surface stirring, as will also Cauliflowers under hand lights, Cabbages, and autumn sown Onions. Earth up Peas in order to protect them from cold winds; at their present stage of growth sparrows eat out their points, and, when once they attack them, they clear off the lot, unless effectual steps be taken to clear the sparrows off by the use of the gun. Sow for succession such kinds as Advance, Dr. McLean, and Best of All. Sow in warm positions Lettuce, Cauliflower, Brussels Sprouts, and Coleworts, and prick out under hand lights or frames those that were sown in warmth a few weeks ago. A good breadth of Potatoes should now be planted on a sunny border, where, in the event of frost setting in, provision can be made for protecting them as soon as they appear aboveground. If no such attention can be bestowed on them it will be better to defer planting for another fortnight; in the meanwhile, however, the sets may be started in shallow boxes of leaf soil, and kept in any light structure from which frost is excluded. Forcing pits containing Potatoes, Carrots, Radishes, Lettuces, Asparagus, &c., should have their lights drawn right off on mild days, and be closed early in the afternoon in order to husband any little sun heat there may have been. Keep up a regular supply of Tarragon, Mint, and small salads by introducing a small batch at frequent intervals to the forcing pit.—W. W.

Extracts from my Diary, Feb. 18–23, 1878.

Watering Peach trees in orchard houses. Potting on nets and ribbon Grass on Apricots for protection. Planting Pear and Apricot trees. Thinning Grapes on pot Vines. Sowing on south border Dr. McLean, William the First, Marvel, and Standard Peas. Digging vacant ground. Earthing up Potatoes in frames. Sowing a batch of French Beans. Potting fresh soil on surface of Cucumber bed. Pruning and nailing Peas; also outside Vines. Planting Cucumbers out of cold houses on a north border. Making a fresh plantation of Royal Sovereign, Champagne, and Victoria Rhubarb. Getting in fresh batch of Strawberries for forcing. Cleaning, thinning, and tying Staphanotis. Shifting Beans from Melon house into Pine-tre for fruiting. Sowing Carrots and Radishes in frames; also sowing Mignonette in pots. Pruning and nailing Plums; also Red Currants

on walls. Potting Melons in 6-in. pots. Disbudding and thinning Peaches. Tying and staking Tomatoes. Potting Calceolarias. Sowing Petunias. Pruning and nailing Pears and Plums. Digging east border for sowing seeds. Planting Tripoli Onions. Tying pot Vines. Painting Vines in late Vinery. Disbudding Peaches. Propagating bedding plants. Potting Pelargoniums. Hoeing and earthing border of early Peas. Starting Muscat house. Propagating Centaureas and Iresines, and *Mesembryanthemum cordifolium variegatum*. Emptying fine store for Cucumbers. Looking over Apples in fruit room.

—R. GILBERT.

TREES, SHRUBS, & WOODLANDS.

THE CEDAR OF LEBANON AND OTHER CONIFERS.

ALLOW me to thank Mr. Woodall for his remarks in reference to the comparative merits of certain trees to which he has directed attention (p. 71), namely, the Deodar, the Cedar of Lebanon, *Araucaria imbricata*, *Cupressus macrocarpa*, and *C. Lawsoniana*. I note also the incidental remarks in allusion to *Araucaria Bidwilli* and the Norfolk Island Pine, but these being Conifers that will not withstand our climate need not be further referred to. The Deodar, as we all know, when young, and growing in sheltered situations, is always handsome, but, in its more advanced growth, it can hardly be unfair to say that it has utterly failed to realise the hopes and high promise of its earlier days, when first introduced into English gardens. Of the *Araucaria imbricata* there is still room to hope, and fair ground to believe, that in the southern and western counties of England and Ireland it will prove perfectly hardy. It is true it will neither thrive nor live long anywhere within the influence of smoke, but healthy and vigorous trees of it are occasionally met with in the uplands of the midland counties, and in other situations where least to be expected. Some few years ago I saw a dozen or more trees of it, 10 ft. to 20 ft. in height, in the most perfect health, growing in the pleasure grounds of Dunrobin Castle, in Sutherlandshire, not many miles from John o'Groats. The *Araucaria* possesses two properties of no small value in an ornamental tree, that is, it suffers less than most trees from high winds, and it needs no protection from cattle or animals usually occupying pasture land, donkeys excepted. When this latter peculiarity is more generally known, the *Araucaria* will doubtless become one of the most prominent and ornamental of our park trees. With regard to the *Cupressus macrocarpa*, I quite agree with all that Mr. Woodall has said in favour of that magnificent tree. Like the *Araucaria* it is, unhappily, rather tender, and is, therefore, only adapted to the south and south-western parts of the country, but in these localities it will be likely to prove one of the most valuable of this particular group of Conifers, and it is undoubtedly one of the most rapid-growing evergreen trees that we at present possess. These remarks apply only to the spreading and free-growing form of the species, of which there are many varieties. In the year 1858 I planted two small specimens of this variety on either side of the entrance gate leading into the grounds of the late Mr. Robert Byass, Neville Park, Tunbridge Wells. These two trees now measure respectively 50 ft. and 55 ft. in height, and not less than 25 ft. across the broadest part of the trees. In spite of the late protracted and severe frost, with the scorching and bitter east winds, these trees appear at present perfectly unscathed. No doubt both this and the *Araucaria* would thrive equally well on the shores of the western Highlands, where the Gulf stream greatly modifies the severity of the native climate. Three or four years ago I had occasion to visit that part of Scotland during the month of May, and on the eastern shore of what is known there as the Jura Sound, I found growing on the open and exposed lawn of an old Highland mansion and about a couple of hundred yards from the shore, a tree of the Indian Rhododendron, 10 ft. or more in height, in perfect health and covered with masses of scarlet flowers. On the same lawn was growing a plant of the common Hydrangea, 7 ft. or more in height and as much across. *Cupressus Lawsoniana* needs no comment beyond the fact that it is thoroughly hardy, and that some of the varieties are very handsome. The last of the five trees above alluded to is the Cedar of Lebanon, and the opinion expressed by Mr. Woodall, and his comments upon its merits,

led at once to a desire to add my testimony to its incomparable value as a hardy ornamental tree. During a daily occupation amongst trees, extending over a period of more than forty years, I have felt quite a growing affection for this glorious gift of Nature. Mr. Woodall may well refer to the grand old Cedars at Upper Gattin and Warwick Castle as samples of what the Cedar becomes under moderately favourable circumstances. Similar examples in various localities could be easily given, and notably those at Pains Hill, Surrey. There is, perhaps, no grander production in Nature than a Cedar or group of Cedar trees in maturity, or say a stage or two beyond that period. An old Scotch Fir, an old Oak, an Elm, a Sweet Chestnut, or gnarled Beech, may take the next position in point of picturesque beauty, but none of these approach in magnificence and grandeur the aspect of the Cedar. Having said thus much in behalf of this particular tree, it may seem unnecessary to add that during all these years I have, as often as opportunity offered, felt it an obligation laid upon me to influence all whom I could persuade to plant Cedars, and I look back with no small satisfaction at what I have been permitted to accomplish in this way.

With ample evidence to the contrary, in now so many instances throughout the country, it is marvellous to find so many persons clinging to the prevalent fallacy that the Cedar is a tree of slow growth. It is quite true that a Cedar or any other tree will grow slowly, planted, as they very often are, in exposed and draughty situations on open lawns; treatment to which many Cedars have been cruelly subjected. If Cedars are planted like other ordinary trees with the usual shelter of common plantations, and the latter properly attended to, and duly thinned—if this, I say, be done, I venture to assert that they will surpass both in height and bulk of growth the ordinary evergreen trees with which they are surrounded; and not only so, but this growth will be maintained. The Cedar is of course thoroughly hardy, and quite free from any capricious preference as to the soil in which it grows, provided it is fairly good of its kind. There are two localities within thirty or forty miles of London, where a considerable number of Cedars had been heedlessly planted along with the common mixed trees of the ordinary plantations; one of these extending over an area of about forty, and the other twenty-five or thirty acres. In both cases these plantations may have been made fifty or sixty years ago. In one case the soil is a mixture of gravel and clay, and the other a thin covering of heavy loam on a subsoil of chalk. In both the examples referred to the Cedars are the larger trees. Anyone caring to verify this statement, I shall have much pleasure in trying to secure an opportunity for their doing so.

ROBERT MARNOCK.

FENCING YOUNG TREES FROM RABBITS.

IF rabbits only are to be guarded against, netting 2 ft. high might do, but if for hares it should be higher; for one must allow for the snow helping the hare to her dainty morsel, the leading shoot of a Larch, or any of the Conifers, after which the tree does but little good. We have used 27 in. in length of wire to each young tree, well pegged down, and 4 in. in the earth, to keep the ground game from pushing the wire against the tree; and these, which form plantations, are now (although adjoining woods where hundreds of ground game are killed) fine, healthy trees. If it is a spot where it can be done without interfering with the shooting, I would recommend wiring the whole round, keeping the wire 6 in. below the surface, and making a notch in the top of each stake to prevent the netting slipping down. Many have the Grass growing near the trees cleaned away, but from my experience, I think it an error, for by the time the wire is worn out the Grass is a great protection to the bark of the trees. Of course the leading shoot and upper branches must be kept clear.—J. J. M.

Unless wire-netting is very carefully put up, and carefully looked after, it is of very little use against rabbits, when employed on a large scale, after it has been up a few months. The best way is to keep the rabbits down for three years. Young rabbits will force their way through an incredibly small hole, and old rabbits will get in when the snow drifts.—A. J. S.

If for guarding single specimens, 2 ft. netting would be quite sufficient, but for a plantation 3 ft. is quite little enough; and if the soil be light, I should recommend that a separate piece of netting from 8 in. to 1 ft. wide, be laid flat on the ground on the

outer side of the 3-ft. netting, thus forming, as it were, the capital letter L. This should be sunk slightly in the ground by removing the sod, placing the wire in position, and then replacing the turf. As rabbits always try to burrow under the upright netting close to the bottom of it, they are prevented from doing so by the piece under ground. I commenced nearly twenty years ago by using light wire netting; but have given it up for some time as I found that it soon rotted. Some allowed rabbits to get through in a very few years. There are always parts that escape being galvanised; these soon begin to rust and the work of destruction goes on rapidly. It is very little good wiring out rabbits unless the work is properly done. Bad work is merely throwing away money; cheap wire won't remain good five years, and can never be moved; whereas good strong wire can be taken from one plantation, when the trees are no longer in danger, to another. I have found No. 17 wire, 1½-in. mesh, galvanised, the best if the plantation stands by itself; but if joined to others, where there will be young rabbits, a smaller mesh is necessary, as they will get through when small, and some day the new plantation will be found to be well stocked with one's enemies, unable to get back through the meshes.—A SOLDIER

I have had considerable experience in fencing against rabbits, and the best advice I can give is: Plant your trees first, and when they have attained eight or ten years' growth, get your rabbits, but only in moderation. If, however, one lacks patience and will not wait, the next best thing to do is to erect wire fencing; but one might just as well try a brown paper fence as one only 2 ft. high; they would jump it without the slightest difficulty. It might do for a flower bed, because in summer rabbits have plenty of other food, and do not like the trouble of jumping 2 ft. I have tried wire fencing 2 ft. 6 in. above ground, and found it perfectly useless either for young plantations, or anything of which rabbits are fond. The cheapest in the end is good strong galvanised wire, 1½ in. mesh, 3 ft. high, well supported by posts every 6 ft. or 8 ft., and either 6 in. of wire underground or boards of that width. Even with all this 4000 yards would require constant watching, especially in autumn and winter, to stop the holes where the rabbits are found getting through. Wire at 6d. or 8d. per yard will be simply throwing money away. The cheap wire rots very soon, and rabbits get through it with ease. Anything under 1s. a yard would be useless expense, and only end in disappointment. It is needless to say that even ten or fifteen years' growth affords no guarantee from danger by rabbits. If kept in any quantity they will play sad havoc in severe weather with trees of considerable growth, especially Spruce, Larch, Beech, Mountain Ash, Hollies, &c. At such times, when the ground is covered with snow, say for a week or more, the best and only way is to feed them with hay or Turnips; even then choice trees should be protected by tying twigs and small branches round them.—"Field."

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS

Paulownia Imperialis.—In reply to Mr. Rogers (p. 143), as to whether the Paulownia usually forms its flower-buds in autumn or not, allow me to say that I have always found it to do so, and on that account have preferred its nearly allied congener the Catalpa, for, except in the southern counties, the flowering of the Paulownia is not satisfactory. In the spring of 1872, we had a grand display of bloom on a large plant of it at Ashburnham, in Sussex, and that was the only season up to that period in which it had escaped frost. Evidently young, vigorous, growing plants of it are more liable to have their flower-buds injured than those that have become well established, and that have made more compact growth; Mr. Rogers' testimony as to its having passed through this very severe winter unscathed, makes me hopeful that it may yet be more generally planted than it is with success.—A. HOSSACK, Rayley, Alcester.

Timber of Taxodium sempervirens and Kauri Pine.—I notice that Mr. E. H. Woodall says (p. 25) that "extreme rapidity of growth" is a characteristic of this Taxodium, which produces the famous red wood of commerce, so useful for many purposes, being both strong and durable. The timber of the Kauri Pine, another tree of extremely rapid growth, may also be mentioned as producing timber of the highest value, being considered equal to that of English Oak. It is used for masts for the British navy, no other tree being considered equal to it for that purpose. I see that no less than 70,000,000 cubic ft. of Kauri Pine were cut and sawn for home use and export in the province of Auckland, New Zealand during the past year, a fact which affords some idea of its value.—C.

Exochorda grandiflora.—The severe winter which we have had has at least had a beneficial influence on a bush of this beautiful hardy shrub—which, however, with me, at least, generally proves an exceedingly shy and uncertain bloomer, having, after the mild and

almost frostless winter of 1877-78, only produced a single raceme of bloom—by inducing it this year to show bloom on almost every terminal shoot, and on many of the lateral ones as well, much to my delight. I have been told that this shrub is in some places, especially near Weybridge, usually attacked by small birds, such as bullfinches, in the same way as these birds sometimes attack Apple trees, and that unless protected by a net or tiffany screen they eat out all the blossom buds, but they fortunately never so attack it here, though they are by no means so indulgent to the Apples trees in my garden.—W. E. G.

GARDEN DESTROYERS.

THE WINTER MOTH & THE LIME LOOPER MOTH.

CHEIMATOBIA BRUMARIA and *HYBERNIA DEFOLIARIA*.

THESE two moths, though belonging to different genera, are members of the same family, and are very similar in their



Male and female moth and caterpillar of *Cheimatobia brumaria*.
Male and female moth and caterpillar of *Hybernia defoliaria*.

habits. The caterpillars of both species, where abundant, are very destructive to the leaves of most fruit trees and many other trees. The favourite food of the caterpillars of the winter moth is the buds of the Apple trees, but they also extend their ravages to the leaves of Elms, Limes, Willows, Hornbeams, Whitethorns, Hazels, and Roses. The caterpillars of the Lime looper are particularly fond of the leaves of Lime and Apple trees, but they also attack other fruit and forest trees. As the female moths of both species are entirely destitute of wings, or have only the merest rudiments of them, they are much easier killed or prevented from laying their eggs on the trees than most moths, for they are only able to crawl up the stems to reach the buds, near which they deposit their eggs. Several methods may be employed to prevent the female ascending the trees. A layer of birdlime may be placed round the stems of each tree, in which they would be caught if they attempted

to cross it; or a piece of sacking or some stout cloth, or a band of tow bound round the tree, and kept well tarred, would have the same effect. A kind of open wooden box, about 1 ft. high, may be made round the foot of each tree, which should be sunk an inch or so in the ground to prevent the moths getting under it, and kept well tarred or coated well with cart grease. A kind of collar of zinc or sheet iron, with the upper edge turned outwards, can be used in the same manner if well tarred, and will effectually prevent the females from ascending the trees. In the case of espaliers whatever means are used to prevent the females creeping up the stems must be applied to the supports to which the trees are fastened. If any measures of this kind have not been taken, search should be made on the trees for the moths, which, however, are difficult to find, as they so much resemble the bark in colour. It is during the months of October and November, and again in April and May that these precautions should be taken. The caterpillars may be destroyed by laying sheets under the trees and giving the branches a sudden shake or striking them with sticks covered with something soft, to prevent the bark of the boughs being injured, and collecting all that fall. On espaliers and dwarf trees they can be picked off before they have done much mischief by carefully looking over the bursting buds and opening any which have their points fastened together by silken threads. Most birds, particularly starlings, and titmice kill large numbers of these caterpillars; many are destroyed by various insects, wasps and ants. Many of the moths are killed when leaving the chrysalides by early and late frosts, which render the ground too hard to allow the moths to reach the surface; bad weather soon after they make their appearance is very fatal to them. The winter moth may generally be found in October and November, and even in December and January; some, however, do not leave the chrysalides until the following spring. The males generally appear first, and may be seen flying about in the twilight in search of the females, who, as soon as they leave the earth, begin to creep up the trees, as they are unable to fly; they deposit their eggs, which are very small, of a bright green colour, and firmly glued to the tree, singly on the buds and twigs. Each moth lays about 200 eggs. The caterpillars are hatched as the buds are bursting. At first they feed on the tender part of the buds, covering them with fine threads; afterwards they attack the young fruit and leaves, which they fasten together to form a shelter; these they soon reduce to skeletons, and then take up fresh quarters. If in large numbers they soon strip a tree of its leaves, causing it much injury, particularly in the case of fruit trees. Towards the end of May they have usually attained their full size; they then let themselves down to the ground by threads, creep under clods or stones, or bury themselves a few inches below the surface, and become chrysalides, in which state they remain until the beginning of winter or the next spring. The habits and economy of the Lime-looper moth are so similar to those of the winter moth that they need not be mentioned here. The male of the winter moth measures about 1 in. or $1\frac{1}{2}$ in. across the wings when fully extended, the upper pair of which are brownish, reddish, or pale, grey, with several darker, fine, wavy, transverse lines; the lower wings are somewhat paler than the upper. The body, thorax, and head are yellowish-grey, and very slight in proportion to the wings. The female is wingless, or has only the rudiments of wings; her body is $\frac{3}{4}$ in. long, tolerably stout, and darkish grey in colour; if the rudimentary wings are present they have two darker transverse lines. The caterpillars, when fully grown, are about $\frac{3}{4}$ in. in length; their heads are greenish or brownish, the bodies are green or yellowish-green of various shades, with several longitudinal whitish lines; they are twelve-jointed, the first three, the ninth, and last have each a pair of legs; as these legs are at either end of their bodies, when they wish to move they draw up their bodies in a loop, bringing their anal legs close to their front ones, hence the name of loopers; they then advance the front part of their bodies as far as they can stretch, thus becoming quite straight again. All the caterpillars of this family move in this manner, and as they seem as if they were measuring whatever they are moving on, the family has been given the name of Geometridæ, or earth measurers. The chrysalides are of a yellowish-brown colour.

The males of the Lime looper moth are considerably larger than those of the winter moth, measuring $1\frac{1}{2}$ in. or $1\frac{3}{4}$ in. across the wings; the upper pair vary much in colour, but generally are yellow or yellowish-red speckled with black, with the base of the wings reddish-brown and an irregular transverse band of the same colour nearly midway between the edge of the darker base and the end of the wing; in the middle of the lighter space, near the front margin, is a dark spot. In some varieties the base of the wing is not dark. The lower wings are greyish or brownish-white with a central black spot. The antennæ are very deeply toothed. The females are entirely destitute of wings, and are about $\frac{1}{2}$ in. long, of a yellowish-white colour, with several black spots on the back. The caterpillars are nearly $1\frac{1}{2}$ in. long, with their feet arranged in the same manner as those of the preceding species; their heads are reddish-yellow, their bodies are reddish or yellowish-brown, rather darker on the back, with a pale yellow band on either side, in which, at the middle of each joint, is a reddish spot with a white centre. When at rest it assumes the attitude shown in the woodcut. The chrysalides are reddish-brown. S. G. S.

NOTES OF THE WEEK.

Cycads and Camellias.—These, associated with tree Ferns and other fine-leaved plants, are now strikingly effective in the large conservatory in Mr. Ball's nursery at Chelsea. The Camellias, which consist of large specimens, are judiciously intermixed with the variously tinted differently formed fronds of the Cycads, Palms, and Ferns, and arranged in this way, a conservatory is rendered much more enjoyable than when furnished with straight and formal stages, filled with showy but common plants—an arrangement too often found in private gardens.

Æchmea Mariæ Reginae.—This is, without doubt, one of the most useful and attractive of Bromeliaceous plants. Even when not in flower, if well grown, it makes a good table or vase plant, on account of its stiff silvery-green leaves, and when furnished with brilliant rosy-purple inflorescence, as we now find it in Mr. Williams' nursery at Holloway, it is a plant at once effective and striking.

Varieties of Asparagus.—Few plants are more graceful in habit than the different varieties of Asparagus, of which there are now many in cultivation. For table decoration, or for the ornamentation of sideboards, where light, lace-like greenery is needed, few plants will answer better. We lately saw a large and varied collection of the more ornamental kinds of Asparagus in Mr. Ball's nursery at Chelsea.

Lasting Properties of Orchid Flowers.—The length of time during which some Orchid flowers will last uncut in good condition is almost incredible, a remark which appropriately applies to those of that showy Orchid, *Oncotoglossum Halli*, plants of which are now finely in bloom in Messrs. Veitch's nursery at Chelsea. On a specimen of this bearing two graceful flower spikes 3 ft. in length, the first blossoms opened quite three months ago, and yet even now there is scarcely a decayed flower to be found on the plant in question. Orchids like this, which flower for so long a time during the darkest months of the year cannot well be too extensively grown or too highly valued.

Sarracenia purpurea.—Numbers of plants of this in Mr. Williams' nursery, Holloway, are now furnished with large, crimson, globular, nodding blossoms, which contrast effectively with the large and fully-developed pitcher-like appendages with which they are associated. Though hardly this *Sarracenia* is handsomer when grown in heat than out-of-doors.

Lachenalia orchideoides.—This is now in bloom in Mr. Ware's nursery, Tottenham. Its flower-spikes, thickly beset with violet-tinted pale blue blossoms, upright rather than pendulous, render it distinct and really handsome, though perhaps not so showy as some of the better known kinds. *Cortusa pubens*, a larger and more robust species than *C. Matthioli*, is also in bloom in the same nursery.

After the Frost.—I have just seen some tufts of Winter Aconite and Snowdrops in a cottage garden, which had, the latter especially, all the freshness and purity of hothouse flowers. Indeed they seemed to have, during the short periods of sunshine of the last few days, shot from the ground, as it were, too suddenly to become soiled, but in reality it was doubtless the shelter of overhanging shrubs which had prevented their having become rain-splashed. The tallness of the

Snowdrops was very remarkable, both flower stalks and leaves standing boldly erect, fully 10 in. high, as though their having been frost-bound had made them more susceptible to the influence of the succeeding mild weather and rain. Crocuses are showing colour, and Daffodils are pushing their soft green spears upwards, as if really glad to be once more free from the shelter of mother earth. The yellow winter flowering Jasmine has also rushed into bloom with equal rapidity, and the severe weather has caused its flowers to burst open simultaneously, that is, much more so than is usually the case in mild winters. My Roses, too, have pushed forth, I am sorry to see, their tender young growth during the last few days, and fruit-buds are everywhere swelling fast.—B.

Primula Cashmeriana.—This is the name of a pretty Primula belonging to the P. denticulata group, now to be found in Mr. Williams' nursery at Holloway. The plant is sturdy in habit, and its leaves are covered with a sulphur like farina. The plants in question are not yet in flower, but their blossoms are described as being produced in very large heads, and of a rich purple colour with yellow centres.

Camellias at Chelsea.—Notwithstanding that it has been a bad season for the production of good Camellia blooms, the Camellia houses in Messrs. Veitch's nursery look better than we ever remember to have seen them. Plants in pots consisting of large shapely specimens are coming finely into flower, whilst those planted out permanently are full of buds, which promise soon to open. All the best and new kinds are represented by well-grown plants, and when in full bloom will be well worth inspection.

Amaryllises at Holloway.—Seedling Amaryllises now enliven the houses in Mr. Williams' nursery at Holloway with their large and brilliant blossoms. In most cases the plants are exceedingly strong, bearing two and even three large spikes of flowers. Though it is by many thought almost impossible to improve greatly on the kinds of Amaryllises now in cultivation, there are in this collection some with larger flowers than usual, and, moreover, the plants appear to be more floriferous. Arranged in a cool house, the plants alluded to contrast effectively with Cyclamens, Cape Heaths, Tree Carnations, and other plants in flower with which they are associated.

Angræcum sesquipedale superbum.—This fine variety of a well known Orchid is now in flower in Messrs. Veitch's nursery at Chelsea. Its blossoms are nearly twice the size of those of the ordinary type, and they are of great substance, and as white as ivory.

Dendrobiums in Small Pans.—There will shortly be a fine display of these in Messrs. Veitch's nursery, Chelsea. They consist of such kinds as D. crassinode, D. Wardianum, D. Devonianum, &c., all remarkably well grown in small, shallow pans. The pseudobulbs are of good size, and, being thoroughly ripened, owing to their being suspended close to the glass, they promise to produce flower spikes from every joint. Some, indeed, are already fully in bloom, and long rows of them are coming on in succession.

Croton roseo-pictum.—This is one of the finest of the new Crotons now in cultivation. It is good in habit; its leaves are large in size, and its colour, a combination of different shades of crimson, rose, and scarlet, renders it a very striking plant at this dull season of the year. Some good specimens of it may be seen in Mr. Bull's nursery, Chelsea.

♂ **Flowers of Iberis semperflorans at Christmas.**—This useful hardy plant, now in flower in quantity in Mr. Parker's nursery, Tooting, might with advantage be grown for supplying cut flowers at Christmas, or even earlier. Plants of it lifted from the open ground in September, potted, and placed in cold pits or frames for a month or so, and afterwards introduced into a gentle heat, might easily be had in flower during the duller part of the year.

Dendrobium eudocharis.—This pretty hybrid Dendrobe is now in flower in Messrs. Veitch's nursery, Chelsea. It is the result of a cross between D. japonicum and D. heterocarpum. It is dwarf and compact in habit, and its flowers, which are produced in profusion, are creamy-white with a pale yellow-purple striped throat. It is a valuable addition to our collections of Orchids.

Hardy Flowers' at Tooting.—The effects of the few days of mild weather which we have had are clearly visible as regards the growth of hardy flowers, and, should it continue, many of them will soon be in bloom. In Mr. Parker's nursery, even now, Crocus Imperati and the pretty blue C. Sieberi are in full blossom, as are also Galanthus Imperati and G. plicatus; the Giant Hellebore (Helleborus altissimus) is also producing a few fine blossoms, varying from pure white to deep rose; the common Christmas Rose (Helleborus niger) has also been in flower for many weeks past; the Cape Poinsettia is likewise flowering with great freedom, and Saxifraga

Burseriana and S. Rocheliana are also opening their flowers. Hardy Cyclamens, too, in Mr. Barr's ground are in flower, where a little protection has been afforded them, and those growing in masses amongst the Grass under trees will shortly be in bloom.

NOTES FROM KEW.

Hardy Plants.—The mildness of the weather during the past fortnight has awakened quickly many of our early spring flowers. Conspicuous among these are the various kinds of Snowdrops; besides the common Galanthus nivalis, there is the variety called Sharlocki, which may, at a glance, be distinguished from the ordinary form by the blotch of green on the outside of the large petals and much longer and narrower bracts, thereby rendering it very distinct. The plaited-leaved Snowdrop (G. plicatus), though a very old introduction, is not so common as it should be; it has large flowers and broad leaves, which differ from those of all the other kinds by being folded at the back. It is a native of the Caucasus. Undoubtedly the choicest of all is G. Elwesi, which grows about 6 in. high, and has broad, flat leaves of a very deep green. It produces large, drooping, pearly-white blossoms, with the small inner petals wholly green, except a narrow, crisped, white margin. It is a native of Smyrna, and was found by Mr. Elwes on the summit of the Yaman-lardagh Mountains, in 1874. One of the best of the spring flowering kinds of Crocus is C. Imperati, a robust and free-flowering kind, with flowers 2 in. across when fully expanded; these are fawn coloured, heavily pencilled with purple on the outside, and of a pleasing lilac hue within, contrasting finely with the bright yellow stamens. It is also sweet scented. Its native habitat is on the mountains of South Italy, &c., at high elevations. The Alsatian Crocus (C. alaticus) is a new claimant to public favour, and though not so showy as the last, is, nevertheless, very pretty. Its flowers are white with yellow spots at the inner base, and finely grained on the outside with deep purple. It is a native of the Alatau Mountains, and is one of the numerous introductions of Dr. Regel, of St. Petersburg. Crocus chrysanthus var. fusco-tinctus much resembles the preceding in the markings of the flower, but the ground colour is yellow. The variety fusco-lineatus differs in having the black markings disposed in fine lines on the outside. Both inhabit the Bithynian Olympus and elsewhere in Asia Minor. The Bulbocodium-like Colchicum (C. bulbocodioides) is a very desirable plant, much in the way of C. montanum, but the flowers are globular in form; they are produced plentifully and are of the same delicate blush tint as those of C. montanum. The Vernal Bulbocodium (B. vernum) has blossoms of the same colour, but they are much longer and have narrow, attenuated petals.

Greenhouse Plants.—Boronia negatigma though not one of the showiest of the genus, is highly desirable on account of the delicious aromatic fragrance possessed by the blossoms, which are globular, nearly $\frac{1}{2}$ in. in diameter, dull purple on the outside and yellow within. They are borne in profusion on very slender branches furnished with small, Heath-like leaves, arranged in whorls. Such a charming acquisition as this cannot be too strongly recommended, as it is one of the hardiest of the Boronias, as well as one of the easiest to manage, and well adapted for introducing into dwelling rooms during the flowering season. It is of Australian origin, being found in the vicinity of King George's Sound. The round-leaved Xanthosia (X. rotundifolia) is a very remarkable Umbelliferous shrub also from Western Australia. It grows about 2 ft. high, with leathery, heart-shaped leaves, which are sharply toothed, and it produces terminal clusters of small flowers, each enclosed in membranous white bracts much resembling a Hydrangea; besides this, it has not much beauty to recommend it for general cultivation. The Jasmine-flowered Rhododendron (R. jasminiflorum) is certainly one of the most beautiful of that family. It attains several feet in height, though it flowers freely in a small state. The leaves are small and oval, and the blossoms have a narrow tube 2 in. long with spreading petals $1\frac{1}{2}$ in. across, both of waxy whiteness, contrasting beautifully with the deep red stamens rising from the tube. It was introduced in 1848 by Messrs. Veitch from Mount Ophir, where it grows at 5,000 ft. elevation.

Stove Plants.—Eucharis candida, a bulbous plant of rare beauty, at first sight reminds one of its better known congener E. amazonica. It has simple foliage and pure white blossoms, but it differs in its leaves being larger and its blossoms smaller, with the divisions gracefully reflexed, and also in the corona being longer, more deeply toothed, and having a zone of yellow at the base. The flowers are produced in the same umbel-like manner as those of E. amazonica, and expand in quick succession. It was introduced by Mr. Bull from the United States of Colombia, and was first figured in THE GARDEN in 1876, Pl. XVI. Imantophyllum miniatum is another

very handsome member of the *Amaryllis* family, belonging to the non-bulbous section; it has large sword-shaped leaves, that spread in a fan-like manner, and are of a very dark green. The flowers which are large are borne in a dense terminal cluster on a stout compressed stalk; their petals are 2 in. long, bright orange scarlet in the upper half, and yellow in the lower. It is a native of Natal, and therefore may be grown successfully in a warm greenhouse.

Orchids.—Amongst those now in flower may be mentioned *Trichosma suavis* (syn. *Eria cylindropoda*), which, though an old introduction, is one of the rarest of East Indian Orchids in cultivation. It has short, slender stems, with oval, leathery leaves, and produces its flowers in short, loose, terminal racemes; they are of the size and form of those of the old *Cologyne media*, white, with a golden lip, the edges of which are marked with deep brownish-red streaks; but the chief point of attraction is their delightful fragrance. It was first discovered and sent to Chatsworth by the late Mr. Gibson from the Chirra district in the Khosea Hills, where it was found growing upon trees in densely shaded woods at high elevations. *Dendrobium glumaceum*, a native of the Philippines, is represented by a very fine specimen bearing a score or two gracefully drooping spikes of small, pellucid, ivory-white blossoms, which are very sweet-scented. Though not showy, this fine Epiphyte has a remarkably pleasing effect, and well merits a place in the most select collection. *Leelia superbiens* is a truly superb plant, being the largest and statelyst of the genus. So handsome is it, that it is one of the few tropical flowers which specially excite the admiration of the natives of Guatemala so that they plant it in front of their dwellings. It is found at considerable elevations growing abundantly, near the town of Comolapa, in the crevices of exposed rocks, but sheltered from north winds, where the stems attain a height of 2 ft. or more, with leaves large in proportion, and produces flower stems frequently 12 ft. long, terminated by a dozen or more of large purple blossoms. *Dendrobium Hilli*, named in compliment to the present Director of the Botanic Garden at Brisbane, is one of the handsomest of Australian Orchids inhabiting the vicinity of Moreton Bay. It is nearly allied to the better-known *D. speciosum*, but may at a glance be distinguished by its more robust habit and larger blossoms, which are cream-coloured, copiously spotted with purple, and borne in long dense racemes, terminating the stem stems with large leathery leaves. *D. Findlay-anum* is a very distinct kind with peculiar knotted, erect stems and large bluish-tinted flowers with a spreading shallow lip, white, with a central blotch of pale yellow. W.

ANSWERS TO CORRESPONDENTS.

Ferneries.—I am about to erect a stove Fernery with a north aspect, and I shall be glad to have the advice of others as to what plants besides Ferns I can grow with advantage in the same house. I presume I can grow Palms, Alocasias, fine-foliated Anthuriums, and Marantas. Will Cycads grow as well in a house with this aspect as where they get the sun? Could I grow any flowering plants along with them?—**AMATEUR.** [All the plants you name, including Cycads, will grow well in such a house, and for flowering plants nothing would do better or be more suitable than tuberous-rooted Begonias, of which the variety is now legion.—W. H.]

Good Standard and Bush Roses.—The frost having killed about half-a-dozen of my standard Roses at Boxmoor would you name some of the best to replace them? Also a few bush Roses that would do well?—**J. D. A.** [Baron de Bonstetten, maroon; Beauty of Waltham, carmine; Duke of Edinburgh, scarlet; Madame Alfred de Rougemont, white; Mlle. Thérèse Levet, rose; and Star of Waltham, crimson, are six good standard Roses. The following selection as bush Roses includes most shades of colour, viz.,—Alfred Colomb, Charles Lefebvre, Comtesse de Serenye, Countess of Oxford, Dr. Andry, Fisher Holmes, Francois Michelin, La Rosière, Louise Darzacs, Madame la Baronne de Rothschild, Marguise de Castellane, Mlle. Eugénie Verdier and Safrano.—A. W. P.]

Planting Carriage Drives.—In answer to "Beta's" inquiries (p. 132), allow me to remark that few things are more difficult than giving advice in matters connected with landscape gardening, unless one is thoroughly acquainted with the ground upon which the work is to be carried out. I have always considered that carriage drives should be planted on either side with such trees and shrubs as will produce the greatest variety and succession of flowers and foliage during the year, in order that the aspect may be as cheerful as it is possible to make it. The list of trees and shrubs suitable for the purpose is a long one; it will, however, only be necessary to give the names of some of the most desirable. What is perhaps of equal importance is the knowledge as to how the outline of the shrubby border is to be formed; this should neither be straight nor parallel with the line of roadway, but should be naturally furnished with recesses here and there, and a greater width of turf in some places than in others. This will afford an opportunity for planting isolated shrubs or plants upon the turf, a feature which, in my opinion,

greatly improves the appearance of carriage drives. The ground should also slope slightly towards the roadway. The following trees and shrubs are amongst the most suitable and ornamental for planting in such situations, viz.,—Arbutus, Portugal Laurels, Philadelphus, Anonhus, Coluteas, Spiræas, Berberis, Laurustinus, Cydonias, Tamarix, Broom, Phillyreas, Deutzias, Weigelas, Cornus, Eucyonemes, Chinese and Japanese Privets, Ribes, double Furze, Yuccas, Hypericums, Garrays, Lilacs, Hollies, and Sumachs. Should space be found amongst the foregoing somewhat in the background, the following trees should be introduced, viz., Birch, *Aspid.*, double-blossomed *Rosaes* and *Cherries*, Purple-leaved *Beech*, *Laburnum*, *Cercis*, *Salisbury*, Variegated *Acers*, *Scarlet* and other *Horse Chestnuts*, and *Scarlet Thorns*. Common Laurels, *Ligustrum ovalifolium*, and similar shrubs may be used to fill up any blanks which remain. Upon the broadest portions of the turf Pampas Grass, Yuccas, Bamboos, and any of the many graceful and dwarf-growing Conifers should be planted singly. Where *Rhododendrons* are planted in masses, the bulbs of hardy *Liliums* should be introduced amongst them. With respect to planting clumps, much will depend upon whether they will be in sight of the house or not, or whether they would be surrounded by any large forest trees, or otherwise; in the latter case our best forest trees would be the most suitable, whereas in the former I would recommend the following, viz., Maples, Birch, Catalpa, Liquidambar, Robinias, Chestnuts, Beech, Lombardy Poplar, Planes, Turkey Oaks, Limes, Ailantus, Sycamores, Mountain Ash, &c. A few shrubs may also be mixed with good effect round the outer margin of such clumps.—CHARLES DENNIS, *Southwark Park*.

Hardy Ferns.—Kindly give me the names of four good British Ferns suitable for exhibition.—**W. C.** [*Athyrium Filix-femina plumosum*, *Polystichum angulare cristatum*, *Laetrea Filix-mas cristata*, and *Scolopendrium vulgare crispum*.—**H. A.**]

Tree Ferns.—I have some that appear to have a solid mass of roots yet, if reported in larger pots, the latter would appear disproportionately large. Would it injure them to cut off a portion round the root and replot in the same sized pot? Supposing it will not, what amount of root should be removed? The stems are from 2 ft. to 3 ft. in height, and in from 16 in. to 22 in. pots.—**AMATEUR.** [Is there any necessity for replotting your Ferns? We should be inclined to think not; they only require an abundant supply of water. If, however, you must cut away their roots to induce fresh ones to come in their places, you may reduce them one-half if you choose. Tree Ferns withstand with impunity a great deal of hard usage.—**W. H. G.**]

The White Poppy.—In answer to Mr. Masters (p. 132) allow me to say that the White Poppy is cultivated at Bodicots, near Banbury, by Mr. Rufus Usher, the well-known grower of medicinal plants. I saw it in splendid condition the summer before last in Mr. Usher's ground.—**J. K. JACKSON.**

A Cure for Wireworm.—I have some newly turned up meadow land which I wish to use as kitchen garden ground. As usual in meadow land there are wireworms, and the land is too heavy to roll. What is the next best cure? If rape dust, how and in what quantities, should this remedy be applied?—**W. E.** [The land being too heavy to roll is unfortunate, but I would recommend the attempt being made as soon as the drying winds of March and April set in. In the meanwhile give the ground a good dressing of salt—say at the rate of 6 cwt. to the acre, and hoe or scarify as often as the state of the soil and other circumstances will permit. This operation will not only aid in the pulverisation of the soil but bring many of the worms to the surface, when the birds will soon find them out and devour them. I have tried powdered linseed cake on a small scale, and though it certainly destroyed some, it is a much more expensive remedy than salt and frequent rolling, which never fail to effect their destruction.—**W. W.**]

Names of Plants.—*G.*—*Myrsiphyllum asparagoides*. **W. C.**—We are unacquainted with any Aspidium bearing the name you give. Send us a frond or two. The correct spelling is *Imantophyllum*. **J. H. Ross.**—*Dendrobium aggregatum*. **W. C.**—*Laetrea spinulosa*.—**Subscriber.**—If the flowers are of a blackish-brown colour, and Violet scented, the plant is probably *Boronia megastigma*, which it appears to be, as far as we can judge by the scrap sent. **J. P.**—*Sparmannia africana*; send the other when in flower. **Mr. Regent's Park**—*Asplenium biforme*, syn. *A. bulbiferum incisum*.

Questions.

Finely-flowered Oncidium excavatum.—I have a small plant of this *Oncidium* in an 8-in. pot bearing a spike of blood-red flowers 4 ft. in length, furnished with over 360 fully-expanded flowers. Is not that an uncommonly large number of flowers for this species to bear?—**AMATEUR.**

Heating Small Greenhouses.—I have a small greenhouse, span-roofed, 20 ft. by 14 ft., and 12 ft. high. I want to heat it to at least 50° or 55° during winter, but I am totally unable to decide what kind of boiler would be the best and ultimately cheapest, as each vendor declares his own apparatus to be the best, and I have no technical knowledge to enable me to estimate their respective merits. As this is a most important question to amateurs, would you kindly insert it? When I hope that some of your readers may be able to give us the benefit of their experience in the matter.—**L. J. BROWNE.**

Cucumber and Melon Failures.—My Cucumber and Melon leaves have become spotted, and though the plants are growing luxuriantly and showing plenty of fruit, both that and the blossoms die off. To what cause can such failures be attributed?—**A. M.**

No. 80]

SATURDAY, MARCH 1, 1879.

Vol. XV

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—Shakespeare.

THE TEA-SCENTED ROSE.

(Concluded from page 151.)

Then will I raise aloft the milk-white Rose,
With whose sweet scent the air shall be perfumed.
Shakespeare.

Were I asked to name the Tea Rose (*a Tea Rose pur et simple*—I will explain immediately) upon which the proprietor might most confidently depend for the constant production of its flowers in true character, be the seasons propitious or unkind, I should declare to win with *Souvenir d'un Ami*. And this Rose is fair as she is faithful. Not only when grown under glass by such artists as Charles Turner and George Paul, 4 ft. in diameter, and covered with its large blushing blooms, is *Souvenir d'un Ami* a sight to make an old man young, but out in the garden, having a sheltered site and careful culture, it abounds in generosity and grace. Not only so, but in this, as in all other cases, the natural process, the purer air, and undiminished light, give a fullness and freshness which can never be quite realised by artificial means; and if a second question was put to me, "What Roses have most impressed you by the grandeur and size of their beauty, during your thirty-four years of observation," I must again reply, firstly, *Souvenir d'un Ami*, and secondly, a *Duc de Rohan*. The former appeared upon a most robust shoot, growing from a four-year old plant, upon a wall with an east aspect, and was, I think, the largest, heaviest, Rose I ever saw, or shall see. It was inspected by many gardeners on the tree, and was shown afterwards, out, to others, all being unanimous in the opinion expressed by a rustic lover of the Rose, "My stars! she's a wopper! Some may read these lines who remember the magnificent specimens of *Souvenir d'un Ami*, which were shown at Hereford and elsewhere, by a brother whom we all love and mourn, the Rev. George Arkwright, and they will readily imagine the capabilities of an abnormal, highly-favoured bloom. The latter Rose referred to was a *Duc de Rohan*, shown by Mr. G. Paul, aforesaid, some years ago at Birmingham, so hugely handsome, that I entreated my friend to remove him from a box, in which he made all the other Roses to appear as though they were ashamed of themselves, and would gladly hide their diminished heads. They might have adapted and addressed to their owner Cassius' words on Cæsar—

Why, George, he doth bestride this narrow box
Like a Colossus; and we petty blooms
Blush under his huge leaves, and peep about
To find ourselves dishonourable graves.

* * * * *
Now, in the name of all the gods at once,
Upon what meat doth this *Duc de Rohan* feed
That he is grown so great?

The last Rose on my list is not even noticed in many of our catalogues, and was unknown to me until my friend, Mr. Curtis, of Chatteris (*nulli secundus*, in his appreciation of a Rose), kindly sent me buds, from which I have grown and shown in victorious stands, the charming flower, truly named *Unique*. It is a white Rose, streaked with rosy-purple, *ressemblant à une Tulipe*, and is a most distinct and attractive variety. Unhappily the buds arrived when I had no vacancies on my seedling Briers, and they were of necessity inserted upon standards. Woe to me! the Rose is *Unique* no more, but has gone over to the majority of Tea Roses upon standards, and is dead. Although "there is life in the old dog (Rose) yet," on which the *Tea Roses* once bloomed in beauty, there are very faint signs of vitality in their illustrious guests; the sweet little cherubs perched up aloft are hopelessly frozen at the mast-head. It is sad to see them, after so much abun-

dant beauty, withered and blackened (the snowy *Niphetos* blackest of all, a swift and just retribution, some will say, upon my disparagement of her merits), and it is a welcome solace to transfer our tearful eyes to the Tea-scented Roses upon the seedling Briers, which are frost bitten, but not vitally injured "scotched, not killed," and from which we confidently anticipate a strong growth and bountiful efflorescence "when the green leaves come again."

I have written so discursively, in the enjoyment of my holiday among the Roses, as a horse, brought from stable to pasture, gallops hither and thither, *lata per arva ruit*, as we had it in our school pentameter, that I have left myself brief space to treat of those varieties of the Tea-scented Rose which are so luxuriant in their growth and "robust" in habit that they more resemble the *Noisette* than the *Tea*, reminding us of the wood and foliage of Cloth of Gold, Lamarque, and Sol-faterre. Regarding these climbing Teas in alphabetical order, we must off with our hats in the presence of the *Belle*, sometimes called the *Glory*, of *Bordeaux*, and of the *Beauty* of *Lyon*; but not even the gallant Captain Macheath would say, "How happy could I be with either," because though the pride of the *Claret Capital* has her charms, in amplitude of form, in glossy foliage, in bicoloured petals, which are of a fresh flesh colour on the one side and of a rosy-purple on the other, her Roses are rough in outline, and, in their quality, coarse. Had she been a *Vine* she would have produced good *vin ordinaire*, and plenty of it, but never *Lafitte* (by the way, I remember to have given half-a-guinea for H. P. Jacques Lafitte, but he was only a mediocre *Medoc*), never *Latur*, nor *Léoville*, nor *La Rose*; whereas the *Lady of Lyons*, the very name endears her to our gardeners, for was she not *Claude Melnotte's*, the gardener's, love? has much more elegance and refinement in contour and complexion. She is not, it is true, so beautiful nor so constant as *Pauline Deschappelles*; she has not quite the hardy constitution of her mother, *Gloire de Dijon*, of whom anon, but, in her best form, she is very winsome, with her pure pale lemon flowers; and thus *La Belle Lyonnaise* justifies the description of her fellow citizen:—*Fleur grande, pleine, bien faite, jaune canari foncé passant au saumon, très vigoureuse et très belle*.

Nevertheless, our *Beauty* of *Cheshunt* surpasses both these foreign belles, as completely as *Venus* surpassed *Juno* and *Minerva*. Her cruel father has selected for her the ugliest name he could find—*Cheshunt Hybrid*; he long evinced a reticence with regard to her merits, marvellously rare among the raisers of Roses; and some Rosarians who had planted the *Tea Rose*, among them one of the most accomplished, have failed from defect of soil or culture to realise her charms, and therefore have doubted and denied them; but she has triumphed at home and abroad. The stern parent says in last report, "We think more and more highly of her after our yearly greater experience," and no Rose-grower who has seen her in the bloom of health, would think his garden complete without her. In pots, on walls, budded high or low, on *Brier* or *Manetti*, it is always charming, with its bright clean wood, and glossy leaves, and exquisite buds, and large symmetrical densely-petalled blooms, in colour rose, deeply flushed with carmine. It is a distinct novelty, and will, I hope, be the founder of a new family; in fact it already stands at the head of a *Nowelle Série de Roses*—*Rosiers, Hybrides de Thés Remontants* in one of the French catalogues, followed by *La France* and two new *Roses*, sent out last spring by M. Guillot, Madame *Alexandre-Bernaix*, and *Mademoiselle Blanche Durrschmidt*.

Climbing *Devoniensis* is a very valuable variety, and must be one of our mural Roses, however few they may be, and however many the disappointments must be. I warn the young amateur of these disappointments, because the growth of this Rose is so rapid and continuous, that its wood is rarely ripened when winter comes, and it suffers grievously from the frost in consequence. Budded low on the seedling *Brier*, and well mulched early in December, it cannot be destroyed, and will come in strength from its base when spring returns; but this constant process of recovery and exuberant produce of branches, which are rarely matured, prevents as a rule that abundance of *Roses* which would be given to a more genial climate. A few

beautiful blooms we are sure to have, and with these we may well be content.

If to the tree some venial errors fall,
Look at the Rose, and you'll forget them all.

Of such an old and universal favourite as Gloire de Dijon it is superfluous to speak. The readers of THE GARDEN know as well as I that it is the first and the last, and the most generous, with its large, many-coloured flowers (white, buff, yellow, and red in lovely combinations), and that although it has rarely in its individual blooms that perfection of form which satisfies the keen connoisseur, no Rose, no flower, in our generation has shed so much beauty and sweetness around our English homes.

Gloire de Dijon has four daughters, Madame Bérard, Madame Levet, Mademoiselle Marie Berton, and Madame Trifle. The first of the four is smaller in size but more compact in shape than her mamma—a very attractive Rose; the second resembles the mother in vigorous growth, but is, in all other points, inferior; the others I have not proved. Madame Trifle is suggestive of something very sweet, though the French description of the Rose is more appropriate to the savoury, and sounds as though the writer was thinking of a mayonnaise—*jaune saumon à l'intérieur, parfois jaune d'œuf cuivé*.

And now ring out wild bells, roar cannons, bray trumpets, roll drums, float flags, fill balconies, wave handkerchiefs, and shout, my Rosarians, shout!—(Yea, let your shouting be such as hath not been heard in England since the Oxford Seven beat the Cambridge Eight at Henley in 1843)—for behold the Emperor of all (Tea-scented) China, Le Roi des Roses, the Field-marshal of the Universe! behold, in all his golden glory,

MARÉCHAL NIEL!

There are but three words which we dare to speak in such a presence as this—"Hip, hip, hurrah!" The hips, of course, for the seedling Brier on which he is enthroned, and the hurrah for the Royal Rose!

S. REYNOLDS HOLE.

THE INDOOR GARDEN.

PLANTING OUT WINTER-FLOWERING PLANTS DURING SUMMER.

I do not wish to find fault with those who adopt and recommend growing such plants as the berry-bearing Solanums, Salvias, Stevias, Eupatoriums, Libonias, &c., in pots all the summer, as I have no doubt success may be obtained in that way, but, according to my opinion, at a greater cost for labour, &c., than when they are planted out. Part of the success of planting such plants as those above mentioned in the open air in summer, depends upon the site selected for them. If planted in very rich land they are apt to become gross, and, therefore, do not lift well in autumn; often they lose their lower leaves, and do not flower so freely afterwards. Again, if the pinching or stopping of the growing shoots be neglected, a straggling habit is engendered, which is difficult afterwards to put right. The pinching should be done when the removal of just the terminal bud will suffice to give the requisite bushy habit. If delayed until several inches of wood have to be pinched off, there is a waste of power, as a greater check than is necessary is given, and in our short summers, time lost is never recovered. Assuming that an open-air, sunny position, where the ground has been some time previously well worked, is available, and that the plants intended to be put out are brought forward and regularly hardened off, about the end of May is a suitable time to plant. In allotting space to each species, the size which they are likely to reach should be considered, as it is better to have a few well-grown plants than a greater number of starveling, ill-developed ones.

Where only medium or small-sized plants are required, cuttings struck early in the season—say now—will, under good management, make good specimens, but when large plants for conservatory decoration are desired, then one, two, or even three-year-old plants, of some kinds, will be more suitable. If any of these be cut well back when the flowering is over, or

say about April, and planted out about the end of May or beginning of June, they will make handsome, well-furnished bushes for the following winter. It will be very beneficial to mulch the surface of the ground amongst and around the plants as soon as they are planted. Mulching tends to keep the roots close at home and near the surface, which will be found to be of immense advantage to them when the time comes for lifting and potting them, as the less the roots are cut about then the better; and for the same reason, in very dry, hot weather, water should be given when necessary, but if well mulched water will not often be required. The period for lifting may vary a little, according to situation, but in most places the middle of September will be as late as they should remain in the beds, and about ten days previous to lifting, the roots should be cut round with a spade at varying distances from the stem, according to the size of the plant and the size of pot they are to occupy, leaving as much root as possible.

If the plants are growing in rich soil, and at any time show symptoms of grossness, a spade thrust into the ground at a suitable distance from the stem, so as to sever some of the roots, will correct any tendency to a plethoric habit, and ensure the production of wood which will be fertile as regards blossoms. This plan of checking the roots a little with the spade will not take up much time, and may be resorted to when necessary, during the growing season. It will promote a larger root development close at home, which will be found to be of great benefit when the plants are lifted. After they are potted into suitable-sized pots (which should not be too large) they should be placed in a shady position for a few days, still keeping them in the open air, as the longer they can remain in the open air, if safe from frost, the better, as it will enable them to become well established before being housed; and they will be less likely to lose foliage than if lifted and moved into a drier, warmer atmosphere at once, before the roots had fairly recovered their power of supplying the wants of the plants. The advantages of planting out are at least twofold; it saves labour, and secures a better development if fairly carried out. Neither a very rich soil nor yet a poor one is so good as one of medium quality. Where the soil is poor and sandy, a little better soil should be placed round the roots of the plants when turned out.

E. HOBDAY.

COMMON PINKS FOR FORCING.

ANNE BOLEYN and the common white are desirable Pinks for forcing in quantity for cut flowers. In the preparation of the plants for forcing an early start is half the battle, and, to obtain this early start, the cuttings or pipings must be taken from plants that have been forced; and any one who may wish to make a beginning should take up a few plants as soon as the weather breaks, pot them, and introduce them by-and-by into a gentle warmth. The cuttings should be taken as soon as the new growth is in a fit condition for striking, which is when the young shoots begin to acquire just a little solidity or firmness at the base. They must be inserted under a handlight or in a close frame, where just a little bottom heat can be had. The cuttings must not be permitted to lie about exposed to the air whilst being prepared, as they are more susceptible of injury from this cause than most plants. As they are trimmed they should be placed in a pan or some other vessel containing water, till a sufficient number be prepared. If only a few are required, they may be rooted in pots or pans; but the first-named plan is the best, and produces the most vigorous plants. They must be shaded from bright sunshine and kept in a moist condition, without too much saturation. A light sprinkling of water when the shading is removed on bright afternoons will be beneficial. Under such conditions the cuttings will soon root, when air should be given, gradually increasing its quantity till fully exposed. As soon as they are sufficiently hardened to bear full exposure, take them up carefully and plant them out in a prepared bed in an open situation, about 9 in. apart. A fresh loamy soil, slightly enriched with old cow manure, suits them best. The summer management, which will not involve much trouble, consists in maintaining a loose friable surface by frequent stirring, and watering occasionally in dry weather. Early in October the plants must be carefully lifted, with balls and all the root possible, and potted in 5 in. or 6 in. pots, putting the strongest in the larger size. Some of the strongest plants of Anne Boleyn may perhaps require pots a size larger, if the cuttings were obtained early. After potting the plants may remain in the open air on a coal-ash bed for a time, but must not be exposed to severe frost. From the open air they

should be taken to a cold pit, where they must remain till moved into heat for forcing. The stronger and better established the plants, the better they will bloom when forced. But if started early, the forcing should begin gently, and the plants should occupy a light position. Of late years a class of perpetual or forcing Pinks has sprung up. About a dozen years ago a bright self-coloured kind, called Garibaldi, was largely grown in the neighbourhood of Yarmouth and Norwich, and among newer introductions the following are desirable kinds to grow for flowering: Annie Williams, White, Perfection, Miss Joliffe, Lord Lyons, Newmarket, and Lady Blanche. E. H.

SOPHERONITIS GRANDIFLORA ON CORK.

THIS, one of the most brilliant of winter flowering Orchids, is more amenable to different ways of culture than most plants. It may be grown and flowered successfully in pots, pans, or baskets, and we have frequently seen it planted on dead stumps of Tree Ferns, and with excellent results. Perhaps in no way, however, is it seen to better advantage than on arch-shaped pieces of virgin cork, as shown in the annexed woodcut, prepared from a plant thus situated in Messrs. Veitch's nursery, Chelsea, where a large number of plants of it are grown in this as well as in other ways. When on cork they can be suspended from the roof or placed flatways against walls or pillars, and in this way they can be grown without taking up space, which



Sophronitis grandiflora on Cork.

would be available for other plants. Small plants of it well rooted should be obtained and fastened on the cork 2 in. or 3 in. apart by means of wire; they should then be suspended close to the glass in an intermediate house, kept well watered with the syringe during the growing period, when they will soon increase in size and occupy the whole block, and when covered with flowers in such profusion as the plant from which our figure was taken will form one of the most attractive objects in the greenhouse or conservatory during the winter months. Its blooms last, if kept free from damp, for a long time in good condition both on the plants and in a cut state, in which way they are unsurpassed for use in button hole bouquets. C. W. S.

DOUBLE-FLOWERED SEEDLING PETUNIAS.

FINDING these so exceedingly useful during the greater part of last summer and autumn for greenhouse and conservatory decoration, as well as for bedding purposes, I would strongly recommend anyone having such structures to keep gay, to get a packet of seed of the double varieties, and sow it at once; double kinds being best adapted for pot culture and not so suitable for turning out, their flowers being too heavy to withstand the effect of wind and wet, which, towards the end of the season, sadly mar their beauty. By sowing thus early, plants may be grown to a large size and had in full bloom by July, if nursed on for a time in gentle heat, and then placed in cold frames or a light house where they can get plenty of sun. This renders them short-jointed, and much more floriferous than they otherwise would be, as the least shade draws them up

weakly, and makes their branches so puny as to require support. The best I had were plunged out of doors in a bed of ashes to keep the pots cool, and thus prevent the soil drying too rapidly. This kind of treatment appeared to suit their requirements exactly, as they grew close and dense, a condition aided by having the points of the shoots nipped out just before the plants received a shift into larger pots.

Although double Petunias may be propagated by means of cuttings, seedlings are preferable, as they grow stronger and give little trouble, but when any of very superior merit show themselves it is always worth while keeping a stock plant of such for cuttings, which, put in now, soon strike root on a manure bed under a bell glass kept close for a time. The single forms make grand beds if planted where they can have plenty of room to spread, but, as they are naturally strong growers, a poor soil is best for them; if deep, so that the roots can get well down, that checks any tendency to over robustness, and yet affords the necessary support during dry weather. Besides forming magnificent beds, single Petunias make fine masses in borders, but, when used in that way, they require support; the neatest and best way of effecting this is using coarse-meshed rabbit wire cut into yard lengths, which, run round and tied to a stake at the ends, forms a capital frame, through which they thread their shoots, and completely hide the wire with their gay blossoms and foliage. There are many other plants of a similar character for which a trellis made in this way answers well, and, as they last for years, nothing for the purpose can be cheaper or more handy.

As Petunia seeds are very small, they should only be slightly covered at the time of sowing, otherwise the young plants are unable to push through the soil. Pans for such seeds should be filled nearly full with rough leaf mould, and on the top of that should be put an inch or so of finely sifted soil made perfectly level and smooth. That done, the next thing is to give a gentle watering, and then they should not be disturbed for a few hours, when all will be ready for sowing. This should be done thinly, and a little silver-sand sprinkled over the seeds, when, if placed in a moist heat, they will soon germinate, especially if the pan be covered with a sheet of glass, or kept dark by a piece of paper for two or three days, as by that means evaporation is intercepted and a more uniform warmth is maintained. S. D.

ORIGIN OF THE SPOTTED GLOXINIAS.

THE origin of this strain of Gloxinias is interesting, as it affords an illustration of how flowering plants which reproduce themselves freely from seed, sometimes break into new and distinct types of form and colour. It has frequently occurred that a certain family or species, which may not have shown during a series of years any great tendency to sport, all at once gives us something both novel and beautiful. M. Vallerand, with whom these spotted Gloxinias originated, informed me that for a number of years he assiduously crossed the best known varieties, but, although he annually raised a large number of seedlings, he could not succeed in obtaining anything better than those already in cultivation. Being discouraged at finding his best efforts so poorly rewarded, he had determined to relinquish the attempt. His seedlings that season had nearly all bloomed, with the usual result. There remained but a few weak plants to flower. Curiously enough, on the weakened and latest seedling appeared a single flower, so distinct and so beautifully marked, that M. Vallerand declared that he was quite taken by surprise. If I remember rightly there was but a single bloom on the plant. It may easily be imagined how that plant was cherished, the flower carefully fertilised, and precaution taken to destroy every other bloom near it. The seed was ripened, and from this sprang many other charming forms. All M. Vallerand's varieties were distinguished by a neat, compact, floriferous habit, and the curiously mottled flowers, so unlike the ordinary strains of Gloxinias, caused at that time quite a sensation in the horticultural world. I have a vivid recollection of going to see his seedling plants when coming into flower. They were planted out in ordinary frames, and certainly presented one of the most interesting flower displays I ever witnessed. All who grow Gloxinias should have some of these spotted varieties in their collection, for, as may be seen by the coloured plate given in THE GARDEN of last week, they are not only highly ornamental, but have a peculiarly chaste and delicate appearance.

Byfleet.

J. CORNHILL.

Treatment of Cyclamens After Flowering.—My experience differs from that of Mr. Cornhill (p. 164) in one very important particular, and as I am a successful grower it is worth consideration. Instead of placing the bulbs to rest under a north wall or frame I place mine where they can get all the sun possible, covering them slightly with leaf mould. A traveller in Palestine told me of this as being natural to the Cyclamen, and I believe the more sunshine it absorbs in this stage of growth the more flowers and the finer will it have in the future.—BROCKHAUST.

Ferns in Windows.—I have an arch over a window in my conservatory fitted with cork, between which are planted different kinds of Ferns. I find great difficulty in supplying the roots of these plants with sufficient nourishment, as the syringes only waters the fronds and leaves the soil almost untouched. Besides I find the syringe spoils the foliage of several kinds, such as *Adiantums*, some sorts of *Pteris*, and others, while on the other hand the spray suits the *Davallia canariensis* and *Platynerium aloicorne*. Can any of your readers recommend any contrivance which would enable the water to drip and percolate gently amongst the pieces of cork, and thus supply water to the roots.—M. L. D.

Heating Small Greenhouses.—In reply to Mr. Browne's inquiries (p. 172), allow me to say that I have a house of about the same cubic contents as the one he mentioned, for which I use a boiler of the following construction. It consists of about 25 ft. of 1 in. steam pipe bent into a series of coils, each coil being 15 in. in diameter, with a space of 1 in. between the coils. The top and bottom ends of the coil are turned outwards opposite ways, and, passing through the brickwork, serve to support the coil. The whole is set in a square fire brick chamber one brick thick, and the chamber is carried up 1 ft. 6 in. above the top of the coil to form a hopper, which is charged with coke. The flue is carried out just level with the top of the coil, and, as the fire below that point burns out, fresh coke falls down to supply the waste. Wrought iron pipe 1½ in. in diameter is used for the connection between the inlet and the outlet of the coil and the cast iron pipe in the house, consisting of 93 ft. of pipe 3 in. in the bore. I have two of these boilers at work, and find no difficulty in maintaining a constant temperature of 55° in one house and 65° in the other. In fact, the temperature has never fallen below these points during the present exceptionally severe winter. The fire only requires attention once in twelve hours, and the average cost per day is 3d. If your correspondent will write to me I shall be very pleased to send him a drawing of the coil and mode of setting, together with other particulars.—J. A. OXLEY, *Inver Hill, Frome*.

Rustic Baskets.—To those who appreciate a really pretty rustic basket, allow me to recommend Wyth Elm rods for their manufacture. The bark being thick, wrinkled, and deeply serrated, resembles that known as virgin cork on a reduced scale without being so heavy in appearance. The heart of the rod is tough, and the bark never seems to have a tendency to crack or peel off even when exposed to a temperature under glass of from 80° to 100°, i.e. when the baskets of which it is made are used to hold plants in pots. I have not tested them with loose soil, but have no doubt of their proving satisfactory. The rods can be obtained of wattled fence or common hurdle makers, and are very cheap. One rod of say from 8 ft. to 10 ft. in length, and from 1 in. to 2 in. thick, on an average, will make a basket quite large enough to hold a fair-sized pot. If required, such rods can be delivered split up the middle. Nothing more is wanted for making up such baskets, but some small galvanised or copper wire, and they stand a vast amount of tear and wear.—C. F., *Merrivood*.

Plant Culture without Bottom Heat.—Mr. Simpson's admission (p. 139) that he never plunges plants of any kind in a bed heated by pipes or fermenting materials, that is, does not use bottom heat, at once brings the discussion between us on this subject to an end. If Mr. Simpson had read my article carefully, he would have seen that the figures given by me clearly referred to the temperature of the house, not to that of the plunging material. It is self-evident that plants grown in hothouses in pots or similar appliances, cannot fail to have their roots as warm as their tops. It is opposed to both the nature and the well-being of plants, to subject their roots to greater heat than their tops, by plunging them in material with a higher mean temperature than that of the air of the house in which they are grown; when less than this is used, from a common-sense point of view there may be said to be no bottom heat at all; and going beyond the subject as relating to plants, with their roots as well as their tops confined to the houses in which they are grown, there is abundant irrefutable evidence that they do as well, or better, with the roots cooler than the tops. But setting individual opinions aside, the fact remains that the greater portion of the best and most successful plant growers have ceased, or all but ceased, to use bottom heat.—T. BAINES. [We have published the above at Mr. Baines' particular request, but here this discussion really must end.]

TREES, SHRUBS, & WOODLANDS.

"TREES OF THE FUTURE."

The family of Spruce Firs, including both *Picea* and *Abies*, may fairly be considered as the type of a Fir tree. Differing as it does by its upright spiry growth and tiers of horizontally spreading side branches, from the rounded forms and spreading, branched head of deciduous trees, we owe to this family in particular much of the charm which our varied woodlands afford us. In the future it seems most probable that the modern introductions will exceed in beauty anything which we before possessed, and will, owing to their hardness and adaptability to most soils and situations, increase the favour in which they are already held. It is again to California, or Oregon, which borders on it to the north, that we are indebted for the most beautiful and hardy species. First, both by right of beauty, as well as by alphabetical precedence comes *Abies Albertiana*, a tree that has now been introduced long enough to show that it is capable of coming to perfection in this climate. It has not received half the attention which it deserves, because it is so much like the Hemlock Spruce (*Abies canadensis*), which does not usually thrive in this country from reasons that are difficult to explain, and is at best but a rather small tree. *Abies Albertiana*, in the forests of Oregon, is a large and most graceful tree, attaining a height of 120 ft. in most places, and exceeding that height occasionally; so it far surpasses *A. canadensis* in stature, while it closely resembles it in habit. Its soft, drooping branches and delicate feathery sprays of foliage, silvered over on the under side, coupled with great rapidity of growth in ordinary soils and situations, should make it a formidable rival to the Deodar, as a graceful tree to be looked at on a lawn at all seasons of the year, and its hardness, combined with its beauty, makes it, perhaps, the most satisfactory tree of large growth introduced during the last twenty years. Side by side with it in its native Oregon forests grows the green *Abies Douglasi*, another tree that has shown itself thoroughly at home with us in England, and is justly considered a very valuable addition to our hardy trees. Its soft, green foliage, rapid growth, and abundant branches have made it very popular among planters, and, as it is a tree of the largest size, we may confidently hope that the next generation will see many thriving examples of it towering aloft and forming landmarks in the distant horizon.

The somewhat sombre but still beautiful *Abies nobilis*, with its dark colouring and stiffer growth, is another most distinct tree from this region, the climate of which in the main so much resembles our own; owing to its sturdier growth it suffers less in exposed situations than *A. Douglasi*, whose only fault is that it loses much of its beauty when fully exposed to gales. In common with these other introductions from Oregon, *A. nobilis* is endowed with a vigorous constitution, and thrives equally well on the flat plain as on the hillside. The fine specimens of this Fir at Elvaston Castle are among those earliest planted in England, and, even in that somewhat low and flat situation, they have withstood the most trying frosts. Perhaps no family of Conifers can show three such distinct and beautiful species as these, the growth and colouring of which are so varied: the first, *A. Albertiana*, with slender branches and short, flattened leaves that spread only horizontally, and show but little of their silver lining; the second, *A. Douglasi*, whose leaves are bright green, soft, and long, radiating like a brush through three parts of a circle; and, thirdly, *A. nobilis*, with stiff blue-green leaves that curve upwards, and which, when young, tip the branches with silver by showing their under surface—thus giving a special beauty to this tree in the month of June.

In so large a family there must be degrees of beauty among its members, and *Abies nigra* certainly has the least claim to that gift in its native country. A small tree even under the most favourable circumstances, it becomes, after forty years' growth, the most wretched-looking object conceivable, with scanty branches and a blackened, smoke-dried aspect. It is the presentment of misery itself, and gives a chill, northern look to its surroundings that can hardly recommend it generally, but yet it has been planted in many parts of the country because there is a stage of its growth when it is attractive; as that, however, soon vanishes, it only deserves mention as an

ornamental tree to be avoided, unless a specially wintry effect be sought for. To Russia it is that we owe the hardy and beautiful *Abies Nordmanniana*, a Conifer that has been largely planted during the last twenty years. In a young state it is decidedly greener and more ornamental than the familiar Silver Fir (*A. Picea*), but in after life it much resembles it. Never attaining to the lofty height of its Alpine congener, it is, nevertheless, a valuable tree, as it is less exacting as to depth of soil and sheltered situation, conditions required by a Silver Fir if mature beauty be sought for.

Among so many introductions from far countries it is pleasant to find an European species (*Abies* or *Picea* Pinsapo) so thoroughly at home in English gardens. A native of Spain, and rejoicing in limestone soils, it has replaced in many localities, its earlier introduced congener *Abies cephalonica*, which, in Nature, is confined to the small area of the island from which it takes its name. Just as *Abies Albertiana* is superior to *A. canadensis*, so is *A. Pinsapo* superior to *A. cephalonica*, a vigorous form of the same Conifer, which adapts itself to circumstances, and forms a handsome and distinct tree. Its rigid, hedgehog-like leaves that radiate evenly round the young shoots, and the spray that branches at right angles to the side shoots, distinguish it at a glance from any other kind; indeed, on the whole, it may be considered the best of European Firs from an ornamental point of view. The Himalayan Spruce Fir (*Abies Morinda*) is another distinct member of this family that must not be overlooked in reference to future blame or praise, and there can be little doubt of its gaining a favourable verdict when planted rather closely. Like the Deodar, its side branches hang very closely to the main stem; the small spray droops perpendicularly as a Weeping Willow, and the whole tree assumes quite a columnar aspect in consequence, so that it has somewhat of a drawn-up look. Owing to its superior hardiness, compared with the Deodar, it reproduces its natural growth in England, and promises to attain something like the height which it reaches in its native country.

Before closing these imperfect notes, which only touch on some of the most familiar of modern importations, a few words on the Japanese *Retinosporas* may not be out of place, as they have lately been so much planted in all parts of the kingdom. In their native country they are of a very straggling habit, so much so that unless pruning or tying up be resorted to, they are apt to become quite unsightly. The lovely *R. plumosa* is a particular instance of this, and the most beautiful specimens in Japan were to be seen in the courtyards of temples, where they were trained to a single stem, and the side branches dexterously pruned, till the effect was much like that of a green fountain. In the colder climate of this country it becomes less straggling in habit, and we are thereby the gainers. *R. obtusa* and *R. pisifera*, though less beautiful, are satisfactory small-growing Conifers that have each a charm of their own, but the variegated forms have a singularly mealy, unsatisfactory effect when full grown. In Japanese gardens it is usual to associate the brightly-coloured Maples with these green Conifers, and it is only under such conditions that the gold variegated variety is seen to any advantage, while the silver variety does not make a really good effect, even under such favourable circumstances. English cultivators now have such numbers of beautiful trees and shrubs from which to select that they can well afford to reject some things that have little else than novelty for their recommendation and may, by planting only what is proved to be beautiful, render their gardens the pride of the world.

E. H. WOODALL.

IMPROVING SPRUCE FIRS BY CUTTING OFF THEIR TOPS.

WHILEST the subject of Coniferous trees is being discussed, allow me to recommend those of your readers who wish to have ornamental specimens of the Spruce Fir to try the effect of cutting off the tops of those whose upward growth is so rapid as to prevent their being well-furnished with side branches. The late Mr. Pearson, of Chilwell, first gave me this advice about twelve years ago, telling me of a gentleman who then lived in the south of Nottinghamshire, who had for a long time been in the habit of treating his Spruce Firs in this way, and with good results. Mr. Pearson also illustrated his advice by two specimens of *Abies Nordmanniana* on his lawn, one of which,

the handsomer and better furnished tree of the two, had formerly been cut down for mischief by one of his children to about half its height. The same thing had recently happened to one of several plants of *Nordmannianas* which I had planted here, and that tree is now the best I have out of some hundred. I do not recommend, nor are any of your readers likely to adopt, an indiscriminate beheading of such trees, but if those who have several specimens of the same sort will try the effect on some of the more lanky and fast growing, I feel sure they will not be disappointed. I have found the treatment answer well with *Abies excelsa* and *A. Nordmanniana*, but especially with *Abies Douglasi*, a species very apt in some soils to overgrow itself and very ready at making fresh leaders. It is interesting to watch the process by which the end of a side branch is educated into a leader, the branch being gradually lifted by it into the perpendicular line of the trunk, when the point of section gradually disappears. I have just cut off 8 ft., being about one-third of their height, from two of my tallest trees of *A. Douglasi*, planted about ten years ago, and through my experience of the treatment have more confidence of the result than some of your readers may feel. I have not treated any specimens of *Abies nobilis* in this way; that species is rather shy as regards making a new leader, and I am hardly rich enough in it to make the experiment.

C. WOLLEY DOD.

Edge Hall, Malpas.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS

Pruning Euonymuses.—There are few shrubs that are better adapted for edging beds or planting on sloping banks or margins of shrubberies than Euonymuses, but the beautifully variegated gold and silver leaved varieties need constant watchfulness in regard to pruning away the green-leaved portions, or the latter quickly monopolise the strength of the plant, and the variegated shoots languish and eventually become overpowered. As, however, a tolerably large collection may be looked over in a short time and the plain-leaved shoots removed, neglect in reference to this matter is inexcusable. As Euonymuses are easily raised from cuttings inserted under hand or bell glasses, I need scarcely say that it is important that the best coloured shoots should be selected for cuttings. Few plants are better adapted for pot culture than Euonymuses, and in districts where this beautiful shrub suffers from exposure a portion at least of the stock should be grown in pots so as to receive some protection in winter. A rather poor compost is the best for bringing out the leaf colouring of the variegated varieties.—J. GROOM.

Camellias Out-of-doors.—I have seen these grown out-of-doors in many different localities, but the most healthy bushes I have ever seen were grown in a border behind a north wall amongst Rhododendrons in Scotland. Owing to the position, or probably the latitude of the place, they did not flower; but they were not injured by 27° of frost in the severe winter of 1860. We have a few plants at Loxford that grow well and also flower well in mild seasons. This year they were well furnished with flower buds, which look well even now, but on taking hold of them they drop off, owing, no doubt, to the severity of the winter. The lowest temperature registered here has been 20° of frost. I see it is stated by some that the buds on bushes out-of-doors are all right. Have they been put to the test of shaking the bushes, or trying to pull them off with the hand?—J. DOUGLAS, Loxford Hall, Lifford.

—We have grown Camellias out-of-doors here for more than forty years. An old workman says that one of our plants was a large one 8 ft. or 10 ft. high forty years ago, and that it was protected throughout the winter with poles and mats. It stood near the house in a very sheltered nook. About eighteen years ago, in order to protect it more fully I had a movable framework made with upright pillars, which fitted into sockets let into the ground; from these rafters were fixed to the house, and a light trellis work on the top was covered with mats, which were also hung in the front to protect the plant as much as possible in severe weather. Now, although this was a very fine healthy Camellia in a sheltered place, and well cared for, setting its buds as freely as possible, often five and six at a point for, which were duly thinned, good flowers were the exception. They opened with a yellowish or brownish tinge at the base of the petals, and dropped almost as soon as they were open; in fact, the season of flowering was so short, and the quality of the blooms so inferior, that I boxed up the ball of the plant and, with lifting jacks, a strong truck, and horse power, removed it to the centre of the conservatory. It is now 12 ft. high, 15 ft. by 15 ft. through, and is furnished with several hundreds of flowers, in all stages of development; some, being open before Christmas, were used for church decoration. In the case of another plant of the same sort (double white) which has been protected and well sheltered, both plant and buds appear quite healthy,

but I am of opinion that not a single fairly good flower will be produced. When the buds are out through, they will be found to be dark in the centre. I would recommend no one who wishes for good flowers, to plant Camellias out of doors, unless in a milder climate even than that of Devon. That they are perfectly hardy, I admit. Some of the growths of last year are 9 in. long, and in good health, but no evergreen with which I am acquainted is more liable to be broken down by snow, and protecting them from that is the chief reason why we protect them here. Sorts of little value may be planted where a little protection can be given, but I would say all good sorts are well worth growing under glass.—JOHN GARLAND, *Killerton, Exeter.*

Camellias under a Verandah.—It may interest some to know that Camellias thrive and look well under a verandah. We have some doing remarkably well and full of healthy buds as large as small Nuts. They have protection from frost only.—WETTERDEN.

GARDENING IN RUSSIA.

From a letter kindly handed to us by Mr. Robert Marnock from an English correspondent of his residing in the Province of Poltava, we make the following extracts:—The snow is now (Jan. 10) so deep, and the weather so boisterous, that even the shops in our village are shut. But winter only began about the middle of December; till then we had beautiful weather. It sometimes happens, too, that we have very little or no snow all the winter, but with hard frost and no snow the roads are frightful; at other times we have neither frost nor snow till February or March; once I have seen spring begin very warm at the end of February, and in the middle of May there were eight days of frost and cold cutting wind; but, in general, winter begins about November and lasts till the middle of March. Worst of all, in this part of the country, the summer is sometimes terribly dry, not a drop of rain falling during two and even three months; this happens every five or six years, and, when you consider the great heat of this climate, you may imagine what are the effects of such long, dry weather. However, the Province of Poltava is not so dry in general as some others further south in the direction of the Black Sea, where there is so little rain sometimes—as last year, for instance—that the crops never arrive at maturity. They are, besides, exposed to the depredations of enormous locusts that swarm in those parts and fly about like birds. They are very pretty but very destructive. A young man who called on me in Kieff last autumn said that last year his father's estate, nearly 3,000 acres, would not yield 100 roubles (£10). In that part of the country, too, the crops are destroyed by an animal called *avashka*; it is about the size of a rat, and lives in holes underground, and, indeed, the ground seems to be full of it everywhere.

In this part of the world it is impossible to have early crops of Cucumbers in frames, unless these are made to fit closely, owing to mice. The Russians are particularly fond of Cucumbers, and must have them at any price as soon as possible. It seems that even the mice, too, have aristocratic tastes, as they prefer them to anything else, especially the seed, which they are certain to scrape up and eat, if they can only get into the frame. About 400 fruit trees had grown here for seven or eight years on a hill, where they were continually beaten and battered with the wind. Of course, they did not yield a bushel of fruit a year. I have had them all lifted and planted in a charming valley, where the soil, too, is much better, and I am in great hopes that we shall have heavy crops this year. We have but few stove and greenhouse plants, for the fact is we have not a suitable place in which to keep them; but we have a great many bedding plants for the *parterres* near the house. In this part of the country it is not men but girls or women that are employed generally in gardens, sometimes only little children. Men are too scarce everywhere, or too dear, and all are required for the field; even boys are sometimes not to be had. In general, people are engaged for the whole summer, otherwise there would be nobody to do the work. Not only do the peasants know nothing about work in a garden (they can neither dig nor rake like a workman), but it is quite painful to see the dawdling sleepy manner in which they go about it. However, I can always have one or two men when I really need them, besides two which I have regularly, in the way of foremen to carry out the work.

There are a few things in Russian gardening which, by way of contrast, I may mention. For instance, it is only the roots of Parsley and Celery that are used in the kitchen; the leaves are never required. Celery is never earthed up and blanched for salad, as in England and other countries, because nobody would eat it. There seems not to be a single stone in the ground; at least, I have never seen one in the whole province of Poltava. The working hours are from sunrise to sunset, that is, from three or four o'clock in the morning till eight or nine at night. Girls are paid at the rate of 10 copeks

a day, women 15 copeks; at the very most, when digging is required, they receive 20 copeks, that is, about 61. a day, and it is considered very good pay. There are but few gardens in the far away steppes which are not entirely under the control of the stewards, so far as relates to the work-people and payment. They rarely have, however, unfortunately, either knowledge or taste, so far as relates to gardening, and when the owners spend their time and money in towns far off, or in other lands, of course, the gardens are allowed to run to waste. This has been the case in several places where I have been; still, I know of several gardens managed by gardeners with whom the steward has no dealings."

THE FLOWER GARDEN.

GYNERIUM JUBATUM.

This is a magnificent Grass, with a flowing, mane-like inflorescence. As the engraving shows, the lateral branches of the plume are remarkable for their length and their graceful curvature, and the secondary branchlets are numerous, long, and slender, the whole forming a dense, massive plume, not less than 3 ft. in length. I have only seen a female inflorescence, which is of a silvery hue slightly tinged with pink at the base of the separate florets. Perhaps it may be worth while stating that the sexes are borne on separate plants in all the species of *Gynerium*, and that the plumes of male flowers are neither so handsome nor so durable as the plumes of female flowers. Whether this is a distinct species the material before me is insufficient to determine, but its distinctness and superiority as a variety are beyond question. The specimen from which the accompanying woodcut was prepared was supplied by Mr. Gumbleton, in whose garden, at Belgrove, near Queens-town, it flowered last autumn. W. B. HEMSLEY.

Outdoor Verbenas.—Although the Verbena is seldom seen in good condition as a summer bedding plant, it is nevertheless well worthy of a little extra attention for that purpose, but good plants cannot be had except good cuttings are procurable. The best means of insuring these for spring propagation is to keep a few stove plants in pots all the summer, cutting them pretty closely in the autumn and giving them a shift. Soon afterwards they should be set in a cool house or pit from which frost is excluded, and in this way better cuttings will be insured in spring than those from autumn-struck plants.—J. G. Linton.

Violet Culture for Market.—The statements referring to this matter quoted by "C. W. S." (p. 155) are too high. Violet culture furnishes to the grower no such an *El Dorado* as is there suggested. Violets are an uncertain crop, and only in good seasons can they be said to pay well. The writer puts the rental of ground as low as £4 per acre, instead of which good market garden land in the neighbourhood of London will fetch from £5 to £6, and the rates, of which no mention is made, are heavy. Whilst the Violets have been calculated at the highest prices the expenses have been put at the lowest; but labour and manure are very costly, especially the latter, as may be seen when I state that an ordinary cartload, as brought from London, is valued at 10s., and the picking, bunching, and marketing present a formidable item. It is difficult to follow the writer when he alludes to bouquets. Violets are gathered at so much per dozen bunches, and generally "leaved" by others, then tied into half-dozens, and in this way sent to market. All the calculations I have heard in relation to the Violet are based on the price per dozen bunches, which are sometimes as high as 2s. 6d., sometimes as low as 91., all depending on the season. During a mild open winter Violets will constantly expand a few blooms, and these maintain a small amount of trade, which is the best paying one; when towards the end of March and the beginning of April, the entire crop of bloom expands and is soon over, the price falls to its lowest point, and the soil produces nothing more for the next eight or nine months. Such a winter as the present is most disastrous for Violets, there being no blooms and the leaves are destroyed wholesale. When the crop does come it will be all at once, and with a glut the returns will be very low. An average profit of £20 to the acre is esteemed a very satisfactory one.—A. D.

Lily Bulbs.—In reply to "B." (p. 157) allow me to say that so far as I could see, the bulbs were the identical ones planted in April, for they occupied the same spots; and the nature of the position which they occupied, coupled with the totally undisturbed condition of the ground, quite precluded the possibility of any person having changed them.—T. SMITH, *Newry.*



A NEW PAMPAS GRASS (*GYNERIUM JUBATUM*).

ORNAMENTAL-LEAVED AND BERRY-BEARING PLANTS FOR MARKET.

PLANTS grown expressly for the beauty of their foliage are at all times in great demand, and many growers devote the greater part of their space to them. Ferns, Palms, Dracænas, and similar plants find a place in the flower market at all seasons of the year, and, as they last for a much longer time uninjured by exposure than flowering plants, as a rule, they fetch more regular prices, inasmuch as growers can take them back again and still grow them into larger and more valuable plants, whilst if flowering plants be not disposed of soon after they come into bloom they become comparatively of little value, and have to be sold for what they will fetch.

FERNS.—These constitute the most important fine-foliaged plants grown for market; they are cultivated both for sale in pots and for furnishing fronds for mixing with cut flowers. The kind most in demand is the Maiden-hair Fern (*Adiantum cuneatum*), and with this—so great a favourite is it—it would be difficult to overstock the market. It is of medium growth, and stands well in rooms when not subjected to the influence of gas-light. In is, in fact, everybody's Fern. It is increased by division of the roots and by spores or seeds, which are sown in September and October, in pots filled with light sandy soil. A little finely-sifted brickdust is generally placed on the surface of the pots, because it soaks up moisture, and prevents the plants, when making their appearance, from damping off, which they are very liable to do. The pots are plunged in beds in which there is a little heat, and they are covered with bell-glasses, small lights, or circular pieces of glass. When well established, they are pricked out thickly in small pots, and afterwards divided and potted on until they are in 5-in. or 6-in. pots, or larger as desired. All Ferns are increased and grown in the same way, excepting such kinds as British Maiden-hairs (*Adiantum Capillus-Veneris*), which have creeping rhizomes, and these are usually increased by cutting up old plants into small pieces and potting them at once in 5-in. pots. To furnishing green fronds of *Adiantum cuneatum* for cutting, a grower near Tottenham devotes several houses. The plants for this purpose are grown in 12-in. pots, in good peat loam and sand, and the fronds which they produce far surpass any which I have seen in any other establishment near London. When these large specimens become exhausted from constant cutting, they are pulled to pieces and potted into 8-in. pots, and are replaced by a batch which has been thus treated previously and become well-established in large pots. In this way a continuous succession of fine healthy plants is kept up. The house set apart for plants for the present cutting is kept much cooler than those in which they are being brought on in succession, and by this means the fronds become hardened, assume a deeper green colour, and last in good condition after being cut for a much longer period than if they had been subjected to a warmer temperature. Each large plant is expected to furnish sufficient fronds during the year to bring in 15s., the average price being 9d. per bunch of about a dozen fronds. *A. gracillimum*, which is a variety of *A. cuneatum*, is now becoming popular as a market plant, on account of its light and graceful fronds, which are excellent for bouquets. It seeds readily, comes true to character from spores, and is, therefore, a favourite with growers. A larger variety, named *A. concinnum latum*, has during late years been held in high estimation; and this has been so far fortunate for growers, as it can be raised to any extent by

means of spores, the produce of which in one year may be grown into beautiful specimens, well furnished with large and graceful, rosy-tinted fronds. A kind similar to this, but in some respects better, named *A. Flemingi*, is likely to be grown ere long to a considerable extent; as yet, however, it is scarce, and, in addition to its requiring more heat than other kinds, it is questionable if it can be raised in as large quantities in so short a time as would be desirable. Indeed, neither of the two kinds last named can be grown anywhere but in a warm house, and their fronds when exposed to the air soon become shrivelled up, both in a cut state and on the plants. *A. decorum*, an old variety not unlike *A. cuneatum*, still maintains its value as a market Fern. It is a fast grower, and an universal favourite. *A. scutum* is also a good variety, resembling, when well grown, the beautiful *A. Farleyense*, but it is much more easily grown, and it lasts long in perfection. With some growers *A. hispidulum* and *A. formosum* are favourites, and so are also the stronger-growing, broad-leaved kinds, such as *A. trapeziforme*, *macrophyllum*, and *Catherinæ*; in fact, most of the *Adiantums*, when grown into neat little specimens, soon command purchasers, but many of them are useless for cutting, and too slow growers to be remunerative. Next in importance to the Maiden-hair Ferns are the different kinds of *Pteris*, of which *P. serrulata* and *tremula* and their varieties are most in request. The common *Pteris serrulata* is a graceful little Fern, but it takes a long time to grow into a good specimen. The advantages belonging to it are that it can be grown in small pots, and, either in a cut state or on the plants, its fronds stand well for a long time, even when exposed to a cool temperature. Of this species there is also a variety in cultivation named *P. serrulata major*, which, when grown in 6-in. pots, is one of the most graceful of Ferns. It has fronds from 2 ft. to 3 ft. in length, branched and beautifully arched, so that a well-grown plant of it forms a grand object for room or table decoration. It is somewhat scarce, owing to the large demand for it and the difficulties experienced in raising it from spores. There is also a crested form of this Fern (*Pteris serrulata cristata*), which is very valuable for market purposes. It grows quite as freely as the original form, and is very pretty. As a pot plant, however, *Pteris tremula* is, perhaps, grown to a larger extent than any other belonging to the genus. It will stand for a long time in heated rooms, and excellent specimens of it can be obtained from seed in twelve months. A new kind of *Pteris* raised in Mr. Ley's nursery at Croydon, named *P. Leyi*, is one which will, no doubt, in time, be largely grown to supply fronds for cutting. As a pot plant, it is unsuitable for market; but its fronds, which resemble in shape a bird's claw, are valuable for placing at the back of button-hole bouquets. To the above kinds may be added *Pteris serrulata cristata grandiflora* (a handsome form), *Adiantum pubescens*, *Phlebodium aureum*, *Blechnum corcovadense* and *braziliense*, *Nephrolepis exaltata* (a useful kind for baskets, and very popular), and *Adiantum Farleyense*. Some of the *Gymnogrammas* are also much grown, but they are difficult to manage when in a small state during winter, and require, perhaps, too much attention to be as remunerative as some of the kinds above named. *Dicksonia antarctica* and some of the *Lomarias* and other forms of Tree Ferns make excellent market plants in a small state, and command a ready sale. They are easily raised from spores. Many other kinds of Ferns are also grown for market, but those just enumerated are the kinds principally cultivated for that purpose. Very large quantities

of the small-growing Ferns are sent to market in April in 2½-in. pots, and in this state they find a ready sale. *Adiantum Farleyense* is propagated by division of the plants, which are cut up in winter and spring. This fine Fern is marketed all through the year, and, owing to its fine appearance and its comparative scarcity, it always fetches good prices. Its fronds are of little value for cutting, as they wither in a few hours; but, as a table plant, this Fern is much sought after. As yet, it has not been raised from seed—a fact which is detrimental to its being propagated quickly, and hence the cause of its being sold at higher prices than most Ferns.

PALMS.—There is always a large demand for Palms in the market; therefore, at all seasons of the year, we find them liberally associated with flowering plants in the florists' shops. They are principally raised from imported seeds, sown in pots and pans, and placed in bottom-heat. When the young plants are up, they are pricked out in other pans or boxes, until they get again established, when they are potted off singly into 3-in. and 4-in. pots in good rich loam and peat. Plenty of heat and moisture are given them; as they progress, they are potted into 5-in. and 6-in. pots, and, before being sent to market, they are exposed to a cooler temperature, in order to harden them a little. Some are potted in large pots, but the pots generally used are 6-in. ones, and in these large and healthy plants are grown. Among the best and most appreciated market Palms is *Livistona borbónica*, a kind easily raised from seed, and one which grows rapidly, good saleable plants of it being obtained in three or four years from the time when the seeds are sown. *Corypha australis* is a common kind also largely grown; it is hardy in character, and, being neat in appearance, is largely in demand for room decoration—a situation in which it lasts in a healthy state for a longer period than most other Palms. *Livistona altissima* is likewise largely in demand, but, as seeds of it cannot be obtained in very great quantities, it is seldom found in the market in large numbers. Another good Palm, equally difficult to procure, is *Rhapis flabelliformis*; it has a graceful habit, and, when grown to a height of 2 ft. or 3 ft., is very handsome. Another excellent Palm is *Cocos Weddelliana*, a light and elegant kind which has not been very long in commerce; but, seeds of it having been obtained in large quantities, it will, no doubt, be largely grown for market in years to come, if it will but stand the rough usage to which such plants as are taken there are subjected. *Areca crenata* and *A. Herbstei* are both dwarf, compact growing Palms of great value for market purposes; their stems are furnished with sharp, black spines, their stalks are of a reddish-bronze, and the under sides of the leaves are beautifully glaucous.

CLUB MOSSES.—These are grown by thousands by growers for market. The bulk of the plants, however, are not sent to market, but are disposed of to decorators on a large scale, such as Mr. Wills, of South Kensington. They usually consist of *Selaginella denticulata*, grown in damp places under stages, and similar positions where little else would succeed. One of the best cultivators of *Selaginellas* near London is Mr. Elliott, of Fulham, who makes a speciality of them. He grows his plants in heated pits, close to the glass; they are never shaded except during very hot sunshine, and more bushy or sturdier plants could not be. Old plants are divided into small pieces, and four or five of them are pricked into 5-in. pots at equal distances apart. They are then subjected to a warm, moist temperature until fresh roots are emitted, and, as soon as they begin to cover the surface of the pots, suffi-

cient soil is added to form a mound, into which the plants soon root, and, when they have become well established, they are copiously watered overleaved daily through a rosed watering-pot, and are freely exposed to light and air. The best plants are picked out as required for market, and the vacancies are filled up with younger ones. *Selaginellas* grown in this way are greatly preferred by purchasers for decorative purposes to those grown in damp and sunless situations, because they better withstand the heat of rooms, and, under any conditions, last perfect for a much longer period. *Selaginella formosa* is grown largely in 5-in. pots, both in the shape of bushy little plants and pyramids. Plants of it in the latter form have a very handsome appearance, and are much used for room decoration, as, if kept warm and moist, they last good for a considerable time. The soil used for Club Mosses is rich sandy loam, peat, and leaf-mould or rotted cow manure, with broken bricks or pots added to keep the soil porous. As regards culture, abundance of water at the roots and overhead, and a warm temperature, are the chief points to be observed.

DRACENAS.—These are favourite market plants, and always command a ready sale at good prices. In addition to their fine appearance, they withstand the heat of rooms and comparatively rough treatment for a long time without apparent injury; hence their popularity. Growers for market propagate them with remarkable rapidity, i.e., when they have a good stock of old plants on which to operate. The old *D. terminalis* still remains the best of the genus for market work; it is harder than any of the newer kinds, and its foliage is bright and lively. *D. Cooperi* is also a good graceful-leaved kind, and *D. Shepherdii* is considered an excellent plant for all purposes. Several of the green-leaved kinds are likewise grown, but those with coloured foliage are most remunerative. A new sort, with green and white variegated leaves, has lately been introduced by Mr. Wills, of Anerley. Its habit of growth is similar to that of *D. terminalis*, of which it is a variety. This kind, which has been named *D. t. alba*, will, no doubt, be grown to a large extent when the stock of it has become plentiful. Market growers propagate *Dracenas* by cutting up the stems of old plants into pieces, each of which contains an eye. These are placed in Cocoa-nut fibre, on a strong bottom-heat, and, thus situated, they soon commence to push young shoots. Here they are allowed to remain until the shoots have attained a height of 2 in. or 3 in., when they are separated from the parent stock and placed singly in small pots filled with sharp sandy soil and plunged in a brisk bottom-heat. In this way they soon take root, and are afterwards potted on until they are in 5-in. or 6-in. pots, sizes in which they are always taken to market. Some propagate *Dracenas* by taking off the leaves with an eye at their base and a piece of the old wood, while others take the full-grown tops off old plants and strike them at once in pots of the proper size for sending to market. Abundance of water, heat, and air are the chief essentials as regards the successful culture of *Dracenas*, and the large, handsome plants that are grown in such small pots are quite marvellous.

SOLANUMS.—About Christmas time there is a ready sale for these, and, indeed, throughout the whole of the winter there is a large demand for them. Market growers possess several varieties of them, but none are greater favourites than Weatherill's Hybrid, which is dwarf in habit and produces masses of large, bright scarlet berries. Some plant out their young plants in the open ground and

PLATE CLXIX.

RHODODENDRON CINNABARINUM.

Drawn by J. N. FITCH, F.L.S.

pot them in autumn, but the most successful way is that of striking them in spring from cuttings which are obtained from old plants introduced into heat early in the year. The cuttings are inserted ten or twelve together in 5-in. or 6-in. pots, and are plunged in bottom-heat, in which they soon form roots; they are then potted singly in 3-in. pots, and, after having become well-established, their shoots are stopped, which induces them to break and form bushy little plants. They are next shifted into 5-in. and 6-in. pots into good holding loam and sand. They are then arranged on wide, airy stages, on which they are allowed plenty of room, in order to induce them to grow short-jointed—a condition in which they yield more berries than they otherwise would. Thus circumstanced, they remain until their fruit is set, a free circulation of air being afforded them whilst they are in blossom. When the berries are fairly formed, manure water is given them, which imparts to the leaves a healthy, deep green appearance, and helps the berries to swell. At this stage the plants are placed out-of-doors in the sunniest position that can be found for them; here the berries soon colour, and, when that occurs, the plants are taken to market. Late batches are finished off in houses in a moderately warm temperature.

ASPIDISTRA LURIDA VARIEGATA.—This is one of the most valuable of market plants; its leaves are beautifully striped with green, yellow, and white, and plants of it will continue to thrive in the same pots for a great length of time, and the heat and dust of rooms affects it but little. It is, however, a plant of comparatively slow growth, and few cultivators can obtain enough of it. It is increased by cutting up the roots in spring, potting them, and plunging them in a brisk bottom-heat until well established, after which the plants grow perfectly well in a greenhouse temperature.

C. W. S.

Large v. Small Plants of *Eucharis amazonica*.—This is such a general favourite, either in the form of old flowers or otherwise, that whatever course of culture yields the best results is the one that should be followed. I have hitherto thought it best to grow good single bulbs in small pots, and by resting batches of plants in succession, I have had a constant supply of fine blooms; but where large numbers of flowers for cutting is the object in view, I think that large pots filled with bulbs will, as a rule, yield the best results, and if required for decorative purposes, there are few plants that combine the good qualities of a flowering and fine-foliaged plant so well as this *Eucharis*. We have at the present time several large specimens of it coming into flower, each furnished with, on an average, twenty spikes of bloom. They were in full bloom in November last, and were kept quite cool until near Christmas, in order to preserve their flowers, which we used in large quantities for table decoration. Since that time they have been subjected to ordinary stove temperature. Being starved from want of pot room, we have supplied them with an unlimited quantity of tepid liquid manure, which few plants like better than the *Eucharis*. Many of the old flower stalks have not yet decayed, but I find that fresh ones are shooting up vigorously beside them.—J. Groom, Linton Park, Maidstone.

Sowing Sweet Peas.—Sowing these where they are to bloom is much to be preferred to sowing them in pots or boxes; and if I were asked to name a time on which to sow them, I should say the middle of March, if a good long season of bloom be wanted. Last year I sowed at the time just named in the open ground, and also a few in pots, for the sake of experiment, in soil well prepared. Those in pots I put under glass, and when up hardened them off in a cold box pit, afterwards planting them out beside the others. Those sown in the open ground commenced blooming as soon as those from pots, were much stronger, yielded much the largest quantity of bloom, and continued longer in that condition; in fact, they bloomed till the flowers were killed by frost. I find that if one wants them to bloom for a long time continuously, it is a good plan to cut off any pods that may form on them as soon as they are visible, as the pods if left on the plants exhaust them, and they soon cease blooming profusely.—J. C. F.

The name *cinnabarinum*, by which this *Rhododendron* is popularly known, has been printed on the plate, but its proper name is *Blandfordiaeflorum*, a species, although closely allied, and perhaps even connected by intermediate forms, very distinct, if we confine ourselves to the typical forms. This, however, is the true *Blandfordiaeflorum*, which is as superior to any of the varieties of *cinnabarinum* known to me as some of the hybrid varieties are to *ponticum*. If the coloration of *R. cinnabarinum* has undergone no deterioration in Hooker's "*Rhododendrons of Sikkim Himalaya*," t. 8, then the name would indeed appear to be more appropriate for the present plant than for typical *R. cinnabarinum*. Nevertheless, our plant could not have a more suitable appellation, for its flowers forcibly recall those of the magnificent Australian Liliaceous genus *Blandfordia*. As *R. Blandfordiaeflorum* has got into cultivation under the name *cinnabarinum*, it may be worth while pointing out how they differ. In the first place the flowers of the latter are scarcely more than half the length of those of the former, and they are of a more open bell shape. In the shape of its flowers *R. Blandfordiaeflorum* reminds one more of the Malayan Island species. *R. cinnabarinum* is a variable plant, and Sir Joseph Hooker says that "neither of the figures in his '*Rhododendrons of Sikkim Himalaya*' (that is to say plate 8 the type, and plate 7, under the name of *R. Roylei*, now regarded as a variety of the other) gives a good idea of the plant, which forms a rather elegant bush, about 8 ft. high, conspicuous in May and June, on account of its elegant blossoms, which form very loose and graceful heads of long, pendulous flowers. The figures are from stunted specimens in very exposed situations. The leaves are not usually reticulated, except under these conditions. It is universally considered poisonous to cattle and goats; of the latter I have seen many die from eating either of this or of a species of *Andromeda*. If employed as fuel the smoke causes the eyes to inflame and the cheeks to swell." This rather long quotation is from the "*Botanical Magazine*." It is given in the text accompanying plate 4788, which is a representation of *R. cinnabarinum* var. *pallidum*, a variety grown in the Horticultural Society's garden under the name of *R. theaeiflorum*. A part of this quotation, that relating to the poisonous properties of *R. cinnabarinum*, I remember having seen in the second volume of Hooker's "*Travels in India*," but not that relating to the "long, pendulous flowers," and I cannot help thinking there is some mistake, because all the specimens and figures I have seen of the varieties of *R. cinnabarinum* have open, bell-shaped flowers. Moreover, this opinion is strengthened by the fact that Sir W. Hooker subsequently, and, shortly after its introduction, figured *R. Blandfordiaeflorum*. In the "*Botanical Magazine*," at the place quoted, three varieties of *R. cinnabarinum* are distinguished, namely, the typical variety, the variety *Roylei*, and the variety figured, *pallidum*. It seems probable that Sir Joseph Hooker's notes got mixed in some way through not having the plants before him at the time of writing. Both species inhabit the same region, at an elevation of between 10,000 ft. and 12,000 ft., or nearly up to the snow line; they are, therefore, amongst the hardiest of the Sikkim *Rhododendrons*. Respecting the plant here figured, Mr. Garland, Killerton, Exeter, writes as follows:—"Some fifteen or sixteen years ago, having several Sikkim *Rhododendrons* in pots which did not flower satisfactorily, I determined to plant them in warm, sheltered situations in the pleasure grounds, and accordingly planted them in a high, perfectly-drained south slope, the soil being chiefly decomposed vegetable matter and leaf mould, and the subsoil rock of volcanic origin. They have grown luxuriantly ever since. *R. Blandfordiaeflorum* has flowered for several years past as freely as the common *R. ponticum*. The plant is now 9 ft. high and from 6 ft. to 7 ft. through, the leading stems being erect in habit and the side branches rather pendent. The trusses of flowers from the latter are somewhat like large bunches of *Fuchsia* flowers; they are also sweet scented. The plant withstood the severe winter of 1866 unsheltered with impunity, and it



RHODODENDRON CINNABARINUM

remains uninjured by the severe weather of the present winter, as I have to-day (January 20) examined the wood, leaves, and flower-buds. All lovers of *Rhododendrons* should give this unique and hardy species a prominent position in their collections, however small these may be, as I feel sure they would not be disappointed. It is also very beautiful in the form of cut flowers. It is spoken of by those who have seen it here as one of the prettiest plants in the pleasure-grounds. I hope this season to send you some good trusses of *R. Thomsoni*, as it is well set with flower-buds. Both the above have a sunny situation, and are well sheltered from cold winds—north, east, and west—by other evergreens."

Such is Mr. Garland's account of this fine shrub, but it must be remembered that he writes from that part of the kingdom, where the climate is eminently favourable to the growth of *Sikkim Rhododendrons*. W. B. HEMSLEY.

GARDENING FOR THE WEEK.

Stoves.

Potting.—Such plants as were started earliest should now be potted, for in the case of stove subjects that have attained about the size to which they are to be grown, the usual course is to remove a good portion of the soil to admit of its being replaced by new material, in carrying out which many of the roots must be disturbed, and some sacrificed, and where too much young growth has been made before this work is done, it naturally receives a severe check, which, for a time, has a stagnating influence that prevents the free development of the shoots essential to the production of an abundance of bloom. With all such plants as the twining section of *Clerodendrons*, that show their flowers almost simultaneously with the commencement of growth from the ripened wood, where the limited root space which they at present have necessitates larger pots, there should be no disturbance of the roots further than the removal of the old crooks, as this would almost be certain to have the effect of limiting the amount of bloom produced. The room given to the various species of plants grown that naturally attain a considerable size will, to some extent, need to be regulated by the space at command, but free-growing subjects like *Allamandas*, *Bougainvilleas*, *Clerodendrons*, *Vincas*, *Tabernaemontanas*, *Hibiscus sinensis*, and others of similar habit, where expected to produce the full complement of flowers of which they are capable, need to be grown to a good size, to secure which they must have sufficient root space.

Propagation of Autumn and Winter Flowering Subjects.—Plants of such kinds as *Plumbago rosea*, *Sericographis Ghiesbreghtiana*, *Thyracanthus rutilans*, *Eranthemum pulchellum*, *Euphorbia jacquiniiflora*, and *Apelandra cristata*, that were recommended some weeks ago to be headed back with a view to producing cuttings, may shortly be expected to have made sufficient growth for the purpose. In the case of all subjects of the above description, I have found that when cuttings are taken off with a heel—although this is not absolutely necessary with more than a few—they will make stouter plants, with less disposition in the cuttings to draw up weakly before roots are formed, than when severed at a joint in the ordinary way; for though it may be argued that there is time enough for the newly struck stock to acquire strength, if a little observation be directed to the subject, it will be seen that plants from the stout, sturdy cuttings, will always keep ahead of those that were weaker at the commencement.

Dichorisandras.—There are several species of these that deserve to be much more generally grown than they are. Their distinct erect habit is held by those who want to make every plant conform to the dwarf, bushy shape to be an objection; but in reality it is an advantage, as in assemblages of plants either large or small, diversity of general character is the greatest charm. Upright plants, such as the *Dichorisandras*, forming as they do stout cane-like shoots from 2 ft. to 3 ft. in height, well furnished with handsome leaves and terminating in conspicuous heads of beautiful flowers, are among the most telling subjects that can be grown for late summer and autumn blooming. For those who are not acquainted with them, I may say that their habit is not unlike that of a miniature *Canna*, the shoots being produced very similarly from a fleshy sort of crown. Where they have been kept tolerably warm throughout the winter, these *Dichorisandras* will now be pushing shoots of sufficient size for cuttings. These should be taken off from the base, inserted in small pots and struck in the usual way. Old plants that bloomed last year, and that have several stems may be divided, so as to confine them to one, two, or three, according to the intention of the cultivator. *D. mosaica*, and *D. vittata tricolor*, are both handsome kinds.

Apelandra aurantiaca Roezli.—The flowering of this plant, like that of most others, is considerably influenced as to time by the treatment which it receives, but, where it has been kept tolerably warm, it will shortly be in bloom, and will form a conspicuous object in the stove or intermediate house amongst plants of dwarf habit, and also for intermixing with *Orchids*. The ease with which it can be made to produce its fine heads of orange-red flowers in small pots when only a few inches high best fits it more than most subjects for growing in quantity. As soon as the earliest-bloomed exaulpes are out of flower they should at once be placed under conditions that will induce them to produce cuttings for propagation.

Francisceas.—The beautiful, distinct, violet-purple flowers borne by most of these plants sufficiently recommend them to the attention of cultivators, who, moreover, find them to be easily grown and propagated. *F. calycina major*, *F. eximia*, *F. Lindenii*, and *F. confertiflora*, if well managed, will give a succession of flowers from the commencement of the year up to midsummer. *F. Lindenii* is one of those plants that have been for some time in cultivation, but which many growers have doubtless not seen, or it would be more generally met with. It is a compact-habited kind, as free in the production of bloom as *F. confertiflora*, and one which retains the colour of its flowers better than that species. Cuttings of any of these put in now and grown on freely through the summer will make nice small flowering plants in 6-in. or 7-in. pots next year.

Æchmeas and Billbergias.—These may now be propagated by division of the crowns, which, if slipped off with a piece of stem attached to each, and placed in 5-in. or 6-in. pots, well drained, and filled with a mixture of either peat and sand or loam and sand, with a liberal sprinkling of pot shreds or charcoal, will soon root and form young growth from the dormant eyes at the base of the lower leaves. Nothing is more useful than these *Æchmeas*, which retain the colour of the bloom stems and seed vessels for so long a period, unimpaired after the flowers are absolutely over, as to be scarcely distinguishable from plants really in bloom. They are also useful either for standing about amongst fine-leaved plants on the stages of the orchid house or conservatory, and through the autumn in halls, corridors, or wherever small-flowering subjects are required. The large-growing *A. Mariei* *Réginé* is a very distinct and handsome variety, a striking object when either in or out of flower. The *Billbergias* have a like habit of growth, but they are much taller and do not last nearly so long in bloom. Some of the largest growers with their relaxed, drooping, long, strap-like leaves are very beautiful when not in flower.

Bertolonias and Fittonias.—It is not unusual to see these elegant small-growing plants lost sight of amongst things of larger stature; yet, independent of their individual beauty, they add much by contrast to the larger growers when associated with them. *Bertolonias* require a good deal of warmth to bring out their true colours, but, when well managed, the markings of such kinds as *B. Van Houtteana*, *B. margaritacea splendens*, and *B. superbiissima*, are scarcely surpassed by those of the best varieties of *Anastochilus*. They will strike root freely now in the shape of cuttings made of the half-ripened shoots kept moderately close, moist, and warm. The *Fittonias* root as readily as weeds, and, in addition to their adaptability for cultivating in suspended baskets, small pots, or pans, they may with the best advantage be used as edgings for stages in stoves or intermediate houses, or for covering out-of-the-way corners, where few plants can be found to thrive freely under so little light. In the case of all such plants as the above, care should be taken to see that the stock from which the cuttings are obtained is free from insects, especially scale and bug.

Orchids.

few indoor cultivated flowering plants admit of the time of blooming being varied so much as *Orchids*. Such portions of the spring and early flowering stock as are required to be kept a little later than usual should at once be put in somewhat cooler quarters; this applies to such as *Cattleyas*, *Laelias*, *Dendrobis*, *Epidendrums*, *Brassias*, *Angulosas*, *Cybeis*, *Oncidiums*, and *Trichopiliis*, that bloom from the mature growth after resting, as any attempt to retard the flowering of plants which bloom from the current growth now in course of formation would be certain to result in imperfect development and injury to the plants. With what retarding is attempted care must be taken not to keep the plants cooler than each respective species can bear, and in consequence of their being in a lower temperature there should be comparatively less moisture given both to the roots and in the atmosphere. At the same time no cold air should be allowed to come in contact with them, for I found when I was growing *Orchids* for exhibition that many species could be retarded a considerable time in a somewhat lower temperature than is usually considered necessary, providing the other conditions which I have mentioned were complied with, but that they would not bear cold external air being admitted to them. Whilst such plants as the above are

at rest, it gives an opportunity for going several times over them, with a view to eradicate any scale with which they may be affected.

Scuticarias.—The long, drooping, thong-like leaves of these plants render them worth a place in any collection of Orchids, even if they never produced a flower, so distinct are they from everything else. S. Steeli and S. Hadweni are both well worth growing; they are often considered difficult to bloom, but I never found them so, if the blocks to which they were attached were kept hung up during the growing season near the roof, wherethey got plenty of light, and the plants were afterwards submitted to a long rest. They may now be expected to be about pushing up their large, singular-looking flowers, and care must be taken that much water be not allowed to lodge about them. It is necessary to allude to this for those who may not have previously grown them, as I have frequently seen the young flower buds destroyed by syringing before it was noticed that they were in existence. This may be avoided by moistening the roots, which will usually be met with extending below the block. Plants of these not yet strong enough to flower, and that require re-blocking, ought to be attended to at once before any growth commences; nothing but the hardest and most enduring wood should be used, for their roots adhere remarkably fast to whatever they may cling, and live much longer than those of many others.

Bulbous Calanthes.—There are few plants that exhibit so much difference between being well grown and indifferently as these. A monst. Orchide, there are not many that need so much light as they do, although the foliage is too thin to bear the direct rays of the sun. There is no situation in which they succeed so well as hung up near the roof over the paths, and where they can be so accommodated, they should be grown in pans. They will very shortly require potting, which will be seen by the growth buds beginning to swell at the base of the pseudo-bulbs; their roots are altogether of an annual character, and those produced last year will be all decayed; but instead of cutting them wholly away, it is better to shorten them to about 1 in. in length, the portion retained, being made firm in the new material, will hold them in position until fresh fibres emitted from the bottom of the young growth get hold of the soil.

Shading.—The sun is often very powerful at this season, if only for a short time. It is not at all advisable to shade the plants sooner than is absolutely necessary, but the position of the house in which they are grown will determine how soon it is requisite to put on the blinds, which by all means should be movable. Houses that stand with the ends east and west expose the occupants in the middle of the day very much more to the sun than when in the contrary direction, and with such it will frequently be found needful to get on the blinds at once.

Roses.

Where a sufficient stock for growing on in pots with a view to forcing next winter, has not already been potted, this must no longer be delayed. Young plants in small pots that want more room should at once be shifted, placing the whole in cold pits or frames, and keeping them a little closer for two or three weeks, until the roots have begun to act; but in the case of plants that are thus undergoing a preparatory process, there must be no attempt at hurrying them on into growth, as the stouter they are the better they will fulfil the object for which they are intended. A slight syringing overhead in the afternoons, when the weather is bright, will help to keep down insects; to still further effect the destruction of green fly, dip any plant that is found infested in Tobacco water. A vigilant eye must be kept on the general Rose house, to detect aphides and red spider, fumigating, if there becomes a necessity for this, very cautiously, otherwise the foliage will be injured. Ventilation should yet be confined to the roof, as the external air is still much too cold for admission at the sides.—T. BAINES.

Flower Garden.

Auriculas.—Airng and watering must now be carefully attended to. The offsets that were taken off require some care; many of them being small and having but slight hold of the soil, are apt to be washed out of the pots when applying water. We use very small pots, smaller than 2½ in.; they are such as are used by raisers of seedling Orchids. Offsets that were placed in these pots last autumn have wintered very well, and we are now potting them off singly into small pots. Last October, or early in November, we planted out a large collection of the choicest Alpines, and not one plant has been injured by the severe weather, showing that they are neither affected by wet nor cold; they are now growing away very freely, although we had 9° of frost the other night, after nearly 6 in. of snow had melted over them during the previous day.

Carnations and Picotees.—The few fine days which we have had have started these into active growth, even though it is cold at night; thus showing as how eager vegetation is to escape from the trammels of winter. We would not start to pot them as yet, but the plants have not been well treated during the winter, owing to want of time to pick off dead leaves, and to stir the surface soil in the pots. We must either do this now or put them, and it will save time as well as forward the work by doing the latter. It may be as well to say that 8 in. pots are large enough for a pair of plants. The soil should be good loam, well enriched with rotten manure and a fourth part of leaf-mould, with the addition of a little sand; press the soil in with the fingers. Many turn the plants out of doors as soon as they are potted, but it is better to keep them under glass for a few weeks, if possible.

Dahlias and Hollyhocks.—It may be as well to remind cultivators that as these are now entirely under their control under glass, a few days' inattention to their requirements may ruin the prospects of a good display of flowers. I have seen them placed in close Vineries, overshadowed by the leaves until the growths had spindled up very weakly. Wherever they are, therefore, they must be placed close to the glass, and after they are well rooted, admit as much air as possible. If they are well established and healthy, shade is injurious. Inure them to stand in cold frames with the lights removed as soon as weather permits.

Pansies and Pinks in Beds.—The named varieties of the former certainly do not stand well during a severe winter, unless they are well established; our beds look very miserable. By far the easiest way to make a good display of show Pansies is to sow seeds of them in August or September; perhaps August is the best month. In that case the plants may be set out in beds before the weather is severe; or they may be wintered in boxes and planted out early in spring, under which treatment they make a grand display. Pinks are looking fairly well, and when a few blank spaces are made good, they will be all right.

Phloxes, Delphiniums, Pyrethrums, &c.—If these, or any plants of a similar character, in beds or borders have to be increased by division, no time should now be lost in doing so. They are all beginning to start, and their growth will experience less injury now than if the work of division were left until later. Although many have no other way of propagating their Phloxes than by chopping up the clumps with a spade, it is a shiftless plan, and never gives good results, such as may be obtained by taking cuttings, as has been previously recommended.

Polyanthuses.—As I write, the first flowers of these are opening, and how very beautiful they are when they first expand! the clear golden edge and centre and the black body colour are most striking. The Polyanthus does not seem to go so entirely to rest as the Auricula, inasmuch as we generally have a few flowers open before March comes. They require plenty of water at the roots now, but care must be taken not to wet the leaves so much as to cause them to damp off. Mats must be placed near the glass to prevent injury from frost.—J. DOUGLAS.

Spring Bedding Plants.—These have been greatly injured and retarded by the protracted winter, and any reserve stock there may be should now be utilised in making good all blanks, or as supplementary plants to any that do not seem likely to start kindly into growth. Well press the whole of the plants into the ground; such as have not large roots the frost is sure to have upheaved, and, if not made firm, the first dry day will cause incalculable injury. Beds of Pinks and Carnations also require similar attention, after which a rich top-dressing of loam and manure should be applied over the entire surface of the beds. If the weather should prove severe it will be desirable to protect beds of Hyacinths and Tulips that are far advanced in growth; a few evergreen branches laid over them will prove an efficient protection. Now that the bulbs that usually fringe shrubby borders can be seen, all such borders should be lightly "pointed" over, i.e., if the shrubs have previously been trimmed, not in too formal a manner, but simply so as to induce an equable balance of branches or shoots. Coniferous trees may also now be trimmed; a denser growth is ensured if occasionally vigorous-growing trees have the tips of the longest branches cut off. *Picea Pinsapo*, *P. cephalonica*, *P. nobilis*, and *Cryptomeria japonica* are specially liable to grow straggly if not thus pruned occasionally. The symmetry of the smaller-growing shrubs is also much improved by occasionally taking off the point of a shoot that is outdistancing the other, or a crooked or duplicate leader. Hedges and other fences that are kept clipped may now all be operated on. Turf levelling and verges trimming should now be proceeded with; also laying and relaying Box and other edgings. The long and severe frost has found out the weak places in walks; therefore, these should now be well drained and re-

gravelled; indeed, the whole of the walks should be thoroughly consolidated by frequent rolling before the drying winds of March set in. We now, surely, may anticipate freedom from very keen frost, therefore the hardy Fernery and rock garden may be thoroughly cleaned up, the dead fronds of any Ferns that were left for winter protection may be cleared off, and the ground dug or pricked over, adding fresh peat soil where requisite, and filling up any gaps that may have been caused through the severity of the winter. Rock plants, in common with others, have suffered to a certain extent; *Ambrosia Campbelli* and *Phlox verna*, which, as a rule, are amongst the hardiest, are, according to present appearances, the most injured; all require pressing firmly into the soil, and, where necessary, fresh soil added. Many kinds will now bear division, and if done now the parts severed will have time to get root hold before drought sets in. Cannas that were lifted in the autumn and stored in sheds may now be divided, potted, and started in gentle warmth. It is to be feared that those wintered in the open ground, if not killed, must be seriously injured, so that it is necessary to make the most of the reserve stock. Dahlias should be placed thickly together in boxes filled with vegetable mould and put in a warm house, say in a warm temperature of from 65° to 70°, when they will soon produce shoots, which, if taken off when about 3 in. long and inserted singly in 3-in. pots in a compost of leaf soil and loam, and plunged in a bottom heat of 75°, will strike root in a week or two, and make the finest of plants for putting out at the end of May. *Alternantheras*, *Coleuses*, and *Iresines* should all now be encouraged to produce cuttings by giving them good positions and abundance of heat; the former strike freely in any warm place. The system which I like best is to make up a hotbed, not more than 2 ft. in thickness, and, having placed the frames on it, the compost is put in; it consists of half loam and half leaf mould, the whole being made firm, and as soon as the heat is up the cuttings are inserted and root in from five to ten days; here they remain until they are transferred to the flower garden at the beginning of June. Those put in at this early period have to supply the bulk of cuttings for the thousands of plants that are required, but there is no difficulty about this, for under such conditions they grow like weeds.—W. W.

Indoor Fruit Department.

Vines.—There having been no sunshine to put the sap in motion, or sufficiently sharp frost since the fruit was out to necessitate the firing of late Vineries, the Vines are this season having a more effectual rest than has been possible for several seasons past, and they may be expected to be proportionately benefited. Since harvesting the fruit by the end of the old or beginning of the new year has been adopted, there has been a general improvement in what were once called the coarser varieties of Grapes, the reason being that such Grapes had not, under the old *végime*, a sufficiently long season in which to ripen, and, as a rule, even now the Vines are not started early enough for them to get fully ripe as they should be by the beginning of October. All late Vineries should be closed by the end of this month; therefore, let the necessary cleansing and top-dressing of borders be done forthwith, and, presuming that the borders are inside, they should have repeated soakings of tepid water, in order to thoroughly moisten every particle of the soil. If the drains be clear, there need be no danger of an over supply; at all events, it is better to err on the side of giving too much than too little. The same remark is applicable to early houses that have inside borders, only it is advisable that the water applied to these be of the same temperature as that of the house; even a few degrees warmer is preferable. There is still a lack of sunshine, consequently, there is very little progress in growth, and, though the season is advancing, be content to proceed slowly rather than risk the permanent injury which the Vines will receive by continuous hard firing. As soon as it can be seen which bunches are best formed, cut off all others not intended for a crop; one day's waste of the energies of the Vines, were such bunches allowed to remain, would be injurious to those left to ripen; and the same may be said in reference to thinning out the berries; all such thinning should be finished by the time when they attain the size of Peas. The ammonia-charged atmosphere which the Vines will receive by continuous hard firing as this season been required, will lay the foundation for attacks of red spider; therefore, as a preventive, keep the atmosphere charged with ammonia, either by occasionally sprinkling the walls and floors with manure water—particularly when closing up—or by keeping a supply of fresh stable litter strewn on the floor of the house. The ammonia-charged atmosphere thus engendered is inimical to insect life, and in the highest degree beneficial to the Vines. Some care and judgment is, of course, needed in the application, both as when to apply it, and in what proportion. With regard to the former, the only time that it is likely to be injurious is when the Vines are flowering (as it must be obvious that a drier atmosphere is then required) and also when the Grapes begin to change colour, when its application should be entirely

withdrawn. Then as to proportion. No one would apply so strong a dose as to make the eyes water on entering the Vinery, and yet I once heard of this being done, the result being that the foliage got injured. Pot Vines will require incessant attention as to moisture; usually they are placed in close conjunction with hot water pipes when, if not plunged, they soon get dry. Where such provision can be made for them after the fruit is set, they would do best placed on a bed of rotten manure, and the roots which protrude from the bottom of the pot might be allowed to ramify in it. Vines that have been cut back for the purpose of making fruiting growth for next year should be scrupulously prevented from rooting beyond the limits of their pots. As soon as Vine eyes have formed roots, take them out of bottom heat and grow them on without it. The succulent, fleshy rootlets that are made in bottom heat soon perish if a check of any kind occurs, and though the growth of the Vine may not be so rapid without bottom heat, it will be far more lasting and fruitful.

Pines.—After such a long spell of sunless weather it will be advisable to have some slight shading material in readiness to be applied for an hour or two when the sun is brightest till the plants get inured to the change, when it must be entirely dispensed with, except in the case of newly-potted plants, which may require shade till the roots get to work in the new soil. With more daylight an increase of air moisture is necessary, more especially to plants that have done flowering, and that are swelling their fruit. In the case of any plants that have missed fruiting, if convenient, let them be placed by themselves, and be kept comparatively dry, both at root and top. Such treatment will soon have the desired effect, when they may be returned to their former quarters. Succession plants that have been wintered in 5-in. or 6-in. pots, should not be allowed to get root-bound, but should be at once transferred to their fruiting pots. When doing this be particular that each ball is thoroughly moistened previously, for if put into the larger pot in a dry state it will remain so. If a few of the largest suckers, taken from Queens, now swelling their fruit, be potted and grown on freely, they will make the finest fruiters twelve months hence. Bottom-heat for fruiting Pines should now range from 85° to 90°, in other stages 10° lower will be ample. The atmospheric temperature should be allowed to fluctuate somewhat with the weather. With sun heat 85° or 90° are none too much for fruiters and those that are growing freely, but on cold windy days 15° or 20° lower will be sufficient.

Figs.—These when in full growth are impatient of the slightest approach to dryness, either in the borders or in the atmosphere; a check thus given frequently causes the fruit to drop prematurely, therefore guard against this by keeping them well supplied with tepid water, and ply the syringe freely whenever the state of the outside air admits of it. Give to plants in pots liberal doses of tepid manure water about twice each week, and keep the growths restricted and fruitful, by continued pinching out of the points at every fourth or fifth joint. All houses should now be started, or at least as soon as the weather will admit of the borders having had the needed top-dressing, which should consist of rich loam, well decayed cow manure and lime scraps, made very firm, in order that a certain amount of resistance may be given, to induce the roots to throw out lateral rootlets.

Peaches.—Red spider will be almost certain to get a lodgement on the earliest forced Peaches, owing to the fire-heat that has had to be applied to keep anything at all like a forcing temperature. As soon, therefore, as the fruit is set, syringe the trees freely with clear water of the same temperature as that of the house, and the walls and floors with manure water. Our early houses when in blossom were badly attacked by ants, which, in search of honey, ate out the pistils of many of the flowers. After trying several remedies, the most effectual was that of surrounding the stems of each tree at the base with guano, and now there is not a single ant to be seen in the house; those that were previously in the blossoms were waylaid and killed. Forcing should still be proceeded with slowly; lost time can be made up when better weather sets in. Trees in flower, in the absence of sunshine, will need to have the pollen artificially dispersed, either by means of a camel's hair brush, or by well shaking the trellis when the atmosphere is dry. The temperature should be kept in as equitable condition as possible; say about 55°.

Strawberries.—As soon as the fruits are set and it can be seen which are likely to swell off most kindly, remove all superfluous berries, about eight to a plant at this early season will be sufficient. *Vicomtesse Hélicart* de Thury and *President* are the only two kinds we force, and for several years they have never failed, whilst other varieties have done so, hence our determination to abide by those two sorts. Plants now being introduced into heat, if intended to ripen in the position in which they are first placed, should be set on turves which have received a sprinkling of wood ashes, soot, or bone dust. Into this, by the time the fruit has set and requires extra assistance

the roots will have found their way, and less feeding and watering will therefore be required. Any that have to be shifted from place to place may be similarly treated by using a second pot, placing a good crock over the bottom, and on this one of the above-named manures, mixed with loam in sufficient quantity to form a foundation for the plants to stand on. This is a better plan than saucers, which have no drainage, and consequently the soil often gets sour and stagnant. With the continued absence of sunlight artificial fertilisation is still indispensable.

Melons.—These are sun-loving plants, and if grown with a superabundance of moisture and fire heat, the dabby growth made will not withstand the sun heat, so essential to their well-being. It is, therefore, imperative that they should have as little air moisture and water at the root as is possible to keep them slowly growing till brighter weather arrives. Give air whenever the outside atmosphere is favourable as soon as the thermometer registers 70°, and close as soon as it begins to recede from that figure, giving the plants a gentle dewing overhead when closing up. Sow for succession in bottom-heat, and, as soon as germination takes place, give them a warm position as close to the glass as possible, in order that they may develop a sturdy foundation on which to build a successful growth.—W. W.

Parks and Open Spaces.

Lawns.—During March, if the weather be favourable, Grass seed should be sown where it is desired to form new turf or renew old. This is especially the case on large open spaces, in order that the young Grass may have a reasonable chance of becoming established before they are much frequented, as it is neither practicable nor desirable to enclose portions for this purpose. The first condition necessary to ensure success is that the ground should be efficiently drained, and the whole surface broken up to a sufficient depth to allow of its being levelled, great care being taken that should any portions require a considerable amount of filling up, that the soil be well rammed in thin layers. This would occur in filling up trenches where drain pipes have been laid. Where the surface is composed of gravel or poor soil, it is desirable to give a dressing of good soil, at the rate of twenty cart loads per acre, or more where it is easily obtainable. Having spread this evenly over the whole area, it should be harrowed and rolled until thoroughly pulverised, and any large stones or other rubbish should be gathered off before the seed is sown. Although in favourable situations three bushels of seed is considered ample to sow per acre, I am of opinion that not less than four bushels should be the quantity sown in public parks and open spaces on all those portions to which the public have access. Care should also be taken that the seed is of good quality. From 1 lb. to 5 lb. in weight of white Dutch Clover, mixed with the quantity of Grass seed recommended to be sown per acre, will be found an improvement on dry soils. After the ground has been prepared in the manner described above, the seed should be sown evenly over the surface. To do this a calm day must be chosen; this done, the best way without exception, with which I am acquainted, to bury the seed is to use steel forks, drawing them backwards and forwards until the seed is properly covered. This any ordinary workman will do; neither harrowing nor raking will bear comparison with forks for this purpose. A light bush harrow may then be drawn over the surface, and all stones, sticks, or other rubbish which may have been turned up, picked off, and, lastly, the whole area thoroughly rolled; in fact, the surface cannot be too much consolidated, unless it be of a clayey nature. Lawns treated in the above manner are sure to succeed, and, with favourable weather, may be fairly green in about a month.—CHARLES DENNIS, *Southwork Park*.

Extracts from my Diary, March 3 to 8.

Pruning and nailing Pears. Digging vacant ground. Thinning Grapes. Painting Vines in late houses. Propagating bedding plants, Pruning Apples. Pruning and nailing *Marchal Niel Rose* and *Clomatis*. Preparing Pine stove for planting Cucumbers, by making a ridge of manure 5 in. thick and 2½ ft. wide. Earthing up Potatoes in frames. Thinning Grapes in pot Viney. Propagating *Verbenas*. Emptying Cucumber house of winter plants and getting fresh plants in. Filling bed in Cucumber house with manure for Melons. Getting in soil for planting Cucumbers in Pine stove. Looking over Apples in fruit room. Sorting Potatoes for growing for exhibition. Sowing *Begonia* and *Amarantus* seed, and potting *Palms*. Earthing up Peas in boxes in cold houses. Laying turf in hotted for Melons 4 in. thick. Preparing Strawberries for forcing. Starting Figs in pots. Rearranging plant houses. Sowing first batch of White Spanish Onions, also of Tom Thumb and summer Cos Lettuce between the Onions. Propagating bedding plants. Preparing house for Melons. Sowing cold frame with *Sivory*, *Marjoram*, and *Sweet Basil*. Sowing Peas in pots for starting in cold houses; also sowing first batch of Brussels Sprouts and *Canliflowers* out-of-doors.—R. GILBERT, *Burghley*.

OBITUARY.

DEATH OF MR. NIVEN, OF DRUMCONDRA.

ON Tuesday, February 18, death removed from amongst us one whose name has been intimately connected with horticulture in Ireland for the past half century. The groundwork of the late *Ninian Niven's* fame was first laid in the gardens connected with the chief secretary's official residence in the Phoenix Park. These he remodelled. Introducing a new and methodic system in all departments, he soon made them worthy of the brief but expressive criticism of the late Mr. London, who, when making a professional tour in Ireland, said "they were the best managed gardens in that country." Mr. Niven's residence here extended over some nine or ten years, during which period he carried off a vast number of prizes at the horticultural shows. About this time the Curatorship of the Royal Dublin Society's Gardens became vacant, and he was then asked to compete for this, the premier post of his profession in Ireland, and was successful in the competition. For five years he discharged the duties that here devolved upon him so entirely to the satisfaction of the Council, that when in 1839, he resigned his post, he received, at the hands of the Royal Dublin Society, a very handsome presentation. During the above period the grounds had been thoroughly remodelled, and great and important improvements made—improvements which have been since further modernised, and, which under the skilful management of his successor, the present curator, Dr. Moore, render the Glasnevin Gardens a credit alike to the profession and to the country.

During the latter part of Mr. Niven's curatorship his time was occupied to a considerable extent in carrying on professional work, and, after resigning his post, he devoted his energies entirely to the career of a landscape gardener, and has since been employed in that capacity in all parts of the country; and it would be easy to point out numerous instances where his art has assisted Nature in a manner only possible to one who was a born landscape gardener. During the thirty-four years of his life devoted to this delightful employment, he further organised horticultural and experimental nursery grounds at Drumcondra, not far from Dublin, where, besides an admirably managed nursery, containing the finest collection of fruit trees in Ireland, are to be found a choice assortment of botanical specimens, and Alpine and herbaceous borders containing mementoes of the olden time, when the countess scarlet and zonal *Pearlgroniums*, *Verbenas*, *Lobelias*, and other florid elements of the modern system of flower gardening had not seen the light.

Amid the many claims on his time in connection with his professional career, as well as the entire management of his home nurseries and experimental garden, he was a not unfrequent contributor on botanical subjects to the periodical literature of the day, more especially in early life, and we find his name constantly occurring in "*London's Magazine*." A valuable essay on the cultivation of the Potato, written many years ago, carried off the gold medal offered by the Royal Dublin Society; this was succeeded by a second pamphlet on the Potato disease, and, just before the close of Mr. Niven's residence at Glasnevin, he published a popular guide to those gardens, the first, we believe, that had been attempted of any botanical garden. With the "Guide" proper was incorporated a text book on practical botany, the object being to popularise a science that, at the period we speak of, had but few votaries among the general public. To these may be added one of the best practical treatises on the cultivation of Asparagus, the value of which is fully appreciated even at the present day.

Mr. Niven had attained a ripe old age—eighty years. During his long and useful life he had an almost perfect immunity from illness, rarely having been confined to the house previous to the attack which ended in his death; and the very day previous to this attack, he had been out marking trees in his garden. Up to a few months since he was, for his years, the halest and healthiest of men, looking as though years of work and wonted energy were still in the future. The symptoms of an insidious disease in the course of last year unexpectedly manifested themselves. Born in Scotland, nearly all the years of his manhood were spent in Ireland. We need hardly add that Mr. Niven was the father of the present curator of the Hull Botanic Garden, so well known to many of our readers.

The Weather in Somersetshire.—We have had another return of severe weather, the thermometer being down to 26°, 24°, and 25° Fahr. on Friday, Saturday, and Sunday nights respectively, and we also have about 2 in. of snow on the ground. The latter circumstance is fortunate, as it will protect the young growths which so many of the herbaceous plants had made during the sunny days last week.—J. A. OXLEY, *Innos Hill Cottage, Frome*.

The Weather in North Notts.—The weather still continues here of the most wintry character; it has been snowing all day (Feb. 24), and it now lies to the depth of 4 in. Yesterday-morning

(the 23rd) the thermometer registered 8° of frost, and it seems likely to last, for the barometer is rising rapidly. This second setting in of severe cold will do great injury to vegetation, especially vegetables. All the Broccolies here withstood the severe frost in January very well, having been laid down close to the ground in the autumn, and some of the early sorts slightly protected with litter. Brussels Sprouts and Cabbages for sprouts are, however, all injured and rotting, having been with their long stalks exposed to the cold east winds in December and January. Young Cabbages, Winter Spinach, and Onions are safe as yet, being close to the ground under a covering of snow. Unless we have a very dry and fine March the spring will be a backward one and vegetables very scarce and dear. I am afraid that the fruit tree blossoms will likewise open weakly and the fruit set badly after such a protracted and severe winter and early spring.—W. TILLERY, *Welbeck*.

GARDENER'S FRIENDS.

THE GOLDEN-EYED FLY OR LAKE-WINGED FLY.

(CHRYSOPE PERLA.)

THIS insect which is generally tolerably common in gardens and orchards, is one of the gardener's best friends, for its grubs are most deadly enemies to the green fly, a fact which cannot be too generally known, as they should be encouraged in every possible manner. The grubs are not at all particular what kind of aphids they attack, for they have been found among



Chrysopa perla.

many different species, from the common green fly of the Rose to the nearly black species found on Poppies and other plants. It is difficult to recommend any particular course of action by which these useful insects may be protected, but every gardener should make himself familiar with them in their various stages of development, so as to avoid injuring them when they are met with. If any of the grubs are found whilst cleaning a plant infested with green fly, they should be carefully removed and placed on some plant where they can be of use. The genus to which this insect belongs, and a nearly allied genus (*Hemerobius*) contain a considerable number of species whose habits and economy are very similar to those of the one I am now describing. The Natural Order to which they belong is called Neuroptera or "nerve-winged," from the great number of nervures or veins in the wings, which form a delicate network. The lace-winged fly is a very beautiful insect, with four large, transparent, lace-like, green wings, which in certain lights give lovely rosy or golden reflections, and brilliant golden yellow or green eyes. When touched it emits a most disgusting odour, which is probably some protection from its enemies, for otherwise, it is a most helpless insect, flying very slowly, and having no visible means of defence. The perfect insects make their appearance in the spring, and may be found throughout the summer, during which season there are several generations. They are very short lived, only living a few days. They arrange their eggs in very curious clusters on the leaves and stalks of plants infested with aphides; every group contains

about a dozen eggs which are each placed on the top of a long transparent, hair-like stalk, sometimes 1 in. long. They have often been supposed to be of vegetable origin, as they much resemble the seed vessels of a Moss or some Fungus. It is not known that the females have ever been found in the act of laying their eggs, but it is probable that they touch the leaves with a viscous fluid, of which they have a supply near the extremity of their bodies, which they then raise, drawing out a thread to which the egg is attached. The eggs are thus elevated, probably for security, and particularly from their future prey, which at times are in such numbers on the leaves, &c., that the eggs might otherwise be destroyed. The grubs are hatched in a few days, and immediately commence a war of extirpation against the helpless green flies; they are furnished with a pair of long, powerful jaws, with which they seize their prey, the contents of whose bodies they instantly suck out. They are very voracious, and will empty the largest aphid in less than half a minute. Mr. Curtis placed two in a box, which fought desperately; the conqueror feasted on the vanquished, and soon afterwards sucked the contents from a caterpillar $\frac{3}{4}$ in. long. They



Grub of an allied species.

generally cover themselves with the skins of their victims, or with pieces of Lichen, &c., so that they are very difficult to find. The grubs of some species so clothe themselves with the skins that they are almost as round as balls. They are fully grown in about a fortnight, and then, selecting some fold in a leaf, spin a little round cocoon, about the size of a small Pea, of whitish silk, in which they become chrysalides. The thread is not produced from the mouth, as it is with caterpillars, but from the end of the body. Except in the case of the chrysalides of the last brood, which remain unchanged until the next spring, the perfect insects appear in about three weeks; they are about $\frac{1}{2}$ in. long, and measure from $1\frac{1}{4}$ in. to $1\frac{1}{2}$ in. across the wings. The males are somewhat smaller than the females. It seems almost impossible that such comparatively large insects should come from cocoons no larger than small Peas, but such is undoubtedly the case. Their heads are furnished with two delicate antennæ about $\frac{1}{2}$ in. long, composed of a great number of very fine joints. The eyes are very prominent, and, as before stated, are of a brilliant golden hue; the legs are short and the body soft and slender; the wings are long and oval, very large in proportion to the rest of the insect. When at rest they cover the body like the roof of a house, but they are not folded over one another. The general colour of the insect is pale green or yellowish-green, but there are very beautiful coloured reflections from the wings in some lights. The grubs, when fully grown, are about $\frac{3}{4}$ in. long. Their bodies have eleven very well-defined joints, with a tubercle on either side, from which springs a bunch of hairs, except the last two joints, which do not bear tubercles. They have only three pairs of legs, one being on each side of the first three joints; the last joint, however, is generally used as a foot. Their colour is usually whitish or pale brown with orange or brown spots. The cocoons have already been described. S. G. S.

THE FRUIT GARDEN.

VINES IN RELATION TO ROOT TEMPERATURE.

I HAVE, during the past winter, and up to the present time, made some observations on the progress of Vines in several of the Vineries here, in relation to the temperature of borders. Early in September last I had thirty-six pot Vines from two nurserymen—eighteen from each. They were strong and well-ripened, and were shortly afterwards pruned and rested till the middle of November, when half the number were started at ordinary temperature, and the remainder followed in the same house the first week in December. The pots were not plunged in a hotbed, but simply set on the floor, as closely together as they would stand, and a bandful of leaves was stuffed in between them to keep them moist; all along the roots have just had the same heat as the tops. Owing to the constantly dull weather which we have experienced they are not so forward as usual,

but those started about November 15 are coming into flower at this date (Feb. 21), and those started in December are close at their heels, but they will not be in flower for a week or so; yet another house of second early Vines that have ripened their wood in June last, and that were pruned early in the autumn and started December 1, or at the same time as the second lot of pot Vines, have now shoots about 6 in. long at the hottest end of the house, while at the coolest end the shoots are hardly 1 in. long. Inside the Vines have been treated exactly the same as the pot Vines, but differently at the roots, which are all outside, except a fractional portion inside the front wall that we do not take into account, either in watering or manuring, the roots outside extending 14 ft. from the Vinery, and lying near the surface of the border. When the Vines were started the border had upon it 4 in. of dry litter, and the temperature of the border, 18 in. and 1 ft. from the surface, ranged from 40° to 45°, the weather having been cold, and snow and frost prevailing. More leaves were added to the border and mixed with litter, and later the materials were again turned, but, owing to the small quantity of them, they did not ferment actively and no more were at hand, the demand being greater than our supply for various purposes, no leaves having been procurable since November till ten days ago, owing to snow lying deeply. The result was that the temperature of the border rose but slowly, and when tested, on Jan. 18, the thermometer stood only at 49°, which is about 10° lower than it was last year at the same period, and the Vines are, I should say, quite three weeks behindhand. They are, however, strong and in excellent health, and have not been started earlier than they have been for years back. Of course, the long continuance of dull weather has had a retarding effect upon the Vines, but so has it also had upon the pot Vines, yet the latter are at least a full month in advance, and are looking strong and well.

Now, what can be the cause of the difference in the progress of the two houses? I can attribute the backwardness of the second Vinery to nothing but the colder root temperature. The Vines in both cases consist of the same variety; they have been treated alike, are about equal in vigour, and the second early Vinery had the advantage of being earlier ripened and pruned, and therefore readier for a start. Take another instance. A mixed Vinery, which has in previous years been started in March, was this season started at the beginning of February; the roots are all inside and cannot get out, and the border was standing at 50° at the time of starting, and it is now (Feb. 21) 55°, and sometimes a little under it. The result is that the Vines have responded at once, and the bunches of such kinds as Duke of Buccleuch, Golden Champion, and Hamburgs are just showing themselves, and if they progress as fast as they promise to do the crop will be ripe about as soon as that in the second early Vinery before mentioned.

A good deal has been said about the intillity of fermenting materials. They have been said to be almost non-effective in communicating heat downwards to the soil, and as rather preventing the escape of heat than communicating any of themselves. This matter I have also investigated during the past winter. Early in January a Muscat Vinery border outside was covered with 1 ft. of leaves and litter in equal quantities, and about the end of the same month the bed was increased to a clear depth of 18 in. by adding more leaves and litter, which were carefully turned and mixed, and since then it has not been touched. When first covered, the border stood at 45°. After being covered, the temperature began gradually to rise, and after the second addition and turning the heat of the fermenting materials rose to 75°, and that of the soil, 18 in. below the surface, to 60°; the temperature was also still going up, and this week a thermometer inserted in the border, 8 ft. from the Vinery front, registers 68° 2 ft. below the surface, which is higher than I want it, the temperature of the litter close to the soil being 70° exactly, and now declining. These observations have been verified over and over again, and by others besides myself, and the temperatures were registered by a proper bottom-heat thermometer, 2½ ft. long, in a copper case.

Though perfectly well aware of the effects of fermenting materials in heating the soil, I did not think that so gentle a heat would communicate such a high temperature to it, to the depth of 2 ft., but the fact is as I have stated, and shows how groundless are the suppositions of those who have, on the one

hand, asserted that the litter burns the roots, and, on the other, that it does not heat the soil to any sensible extent.

J. S. W.

— In January last I visited a friend whose early Vines were in a bad state. They had been started in the end of November, and had broken very irregularly, some of the shoots being much longer than others; the leaves too were small and weak, and the shoots the same, showing but small, deformed bunches; in fact, they looked wretched. I asked what had gone wrong with them, as the wood of last season seemed to have been well ripened. I was told that the heat had been kept at from 50° to 55° at night, with a corresponding rise by day; but as the Vines were planted outside I began to examine the border, which had not been covered. I found it to be a raised one, the greater portion of it being above the ground level, the situation being damp. It was well drained and the soil good. The usual method, until this season, had been to put on it a good coat of dry leaves previous to starting the Vines early in November, and then to thatch it with dry straw. But this year, on such protection had been given, and when the border was inspected we found it to be frozen some 6 in. or 8 in. deep; and as the Vines had been hitherto fed on the top by mulching, &c., during the growing season, and covered up early, of course there was a good portion of roots near the surface, which, I need not say, were hard frozen. Not much relation between root and branch here thought I. I shall, therefore, be interested in seeing how the Vines succeed. I may just mention, however, that I am no believer in extremes of any kind. I would not pile high heaps of fermenting material on a Vine border, nor would I leave it bare as just named. I ought to add that these Vines always broke well, and furnished fine crops every season when protected. The above has been written believing we often learn as much from our failures as our successes. W. X. Y.

SAUCERS OF SOIL FOR FORCED STRAWBERRIES.

I REFER to this matter again just to assure Mr. Cornhill (p. 159) that allowing the plants to root through the bottom of the pot before they flower does not cause an undue "luxuriance of the foliage" at the expense of the fruit, as I am sure I leave it well found out if he tries the plan fairly. It is not like treating the plants to strong doses of manure, for I only recommended sifted loam and sand with a sprinkling of Standen's manure, which consists of bone dust principally. Too much heat will cause an over-production of foliage, more surely than anything I know, and not only in the case of Strawberries, but in that of some other fruits; but an additional rooting area cannot have that effect upon Strawberries in pots any more than it can upon Strawberries growing in the open ground. I find that young autumn-planted runners in a good, deep, well-manured soil always produce the finest fruit and the heaviest crops proportionately. My object in using saucers filled with compost was to save time in watering, which it does in our case, and to avoid using liquid manure which is apt to be spilled on the fruit and foliage by drip or otherwise, and also to cause a disagreeable smell in the house; whereas, the saucers of soil are perfectly inoffensive, the Standen's manure being quite inodorous when mixed with soil, or even when scattered on the surface of a pot. To me this appears a far cleaner and more convenient plan than watering the plants frequently with liquid manure of any kind. I was last year in a Strawberry house where all the plants had just received a dose of liquid manure made from drainage of the cow-houses and pigeries, and the smell was simply intolerable. I once knew a lady of high rank who would not taste forced Rhubarb after seeing how it was grown under pots covered with stable litter, till she had a forcing house, heated with pipes erected for the purpose; but I think a Strawberry house soaked with the drainings of manure is a still more objectional feature of garden practice. According to my experience the Strawberry house is one of the places in the garden most frequented by ladies and gentlemen during March and April. They come simply to see the Strawberries growing. It is desirable that the house should be clean and free from offensive smells at such times.

J. S. W.

Pear, Leon Leclerc de Laval.—This is a good baking or stewing Pear, but worthless as a dessert fruit, although the late Mr. Thos. Rivers speaks of it as being often half melting and agreeable as such. This may be so in the soil and climate of Sawbridgeworth, but not here. I merely direct attention to it now for the purpose of pointing out its free bearing character, either in the form of pyramids or bush trees. We have had good crops from a bush tree during the last two seasons, and they keep well and are of good size. The tree is hardy and grows well here, and the fruit is fit for use from January till June.—J. C. F.

NOTES OF THE WEEK.

Camellias from New England.—Mr. C. M. Hovey, the well-known Boston horticulturalist, has just arrived in London, bringing with him some of his most remarkable gains in new Camellias, in the raising of which he has been for many years most successful. He has also brought a box of cut flowers of many of his own varieties, and these, which we saw in London the fifteenth day after they were cut in Boston, were in excellent condition. They were packed loosely in a cardboard box, there being five or six inches of shoot to each flower. Some of Mr. Hovey's new varieties will doubtless soon be seen in flower in this country.

Fuchsia splendens.—This fine Fuchsia is well grown, and flowered during the winter and spring months by Mr. Cannell, of Swanley. It is one of the best of Fuchsias for winter flowering, coming readily into bloom without much forcing. Indeed at all seasons of the year, under proper management, well flowered plants of it may be obtained. In habit it is graceful, whilst its Correa-like scarlet yellow-tipped blossoms are freely produced on every young shoot. In a cut state, sprays of it are very useful for small glasses or vases—a condition in which they last in perfection even in warm, close rooms for several days. Mr. Cannell has large specimens of this Fuchsia in flower at the present time in his nursery.

Spring Flowers.—I see in Somersetshire that hardy Cyclamens, slightly protected, are in flower. I have had the white Cyclamen hederifolium in a south corner, unprotected, in flower for the past fortnight; also Crocus Imperati, several sorts of Hepaticas and Galanthus Imperati, Violet Victoria Regina, and Helleborus colchicus and abasicus, are well in bud. Veronica Blue Gem I find stands the cold well, the temperature having dropped as low as 16° Fahr. Other kinds of Veronicas seem to have been cut back decidedly, the mean temperature for January being 32° Fahr. I have forgotten to mention that Daphne indica alba is also in bloom; notwithstanding the cold and snow resting upon it, the leaves are only slightly browned.—A. B. T.

Early Spring Flowers in Kent.—The frost having here relaxed its hold of the soil, spring flowers have made a sudden bound into full bloom, and, although the Snowdrop bears the Palm for chaste and quiet beauty, drooping its head as if to hide its charms, the Golden Aconite on the contrary spreads wide its yellow petals the moment the sun looks through the drifting clouds. We have here spring flowers such as these scattered in unlimited quantities on banks, under trees, and in semi-wild positions, and they seem to rejoice in being left undisturbed by spade or scythe.—J. G.

Cannell's Dwarf Ageratum.—This is the best Ageratum for pot culture which we have seen. In habit it is compact and branching, and plants of it grown in 5 in. pots make neat pyramidal bushes, that are masses of dark bluish-purple-coloured blossoms during the winter months, and form good associates for Primulas cyclamens and similar plants. In such company we found the other day a quantity of plants of it blooming profusely in Mr. Cannell's nursery at Swanley, where the stock originated.

Dracenas for Table Decoration.—Narrow-leaved Dracenas are found to be the best for table decoration, and when these combine a graceful habit with finely-coloured leaves they are doubly valuable. Amongst narrow-leaved kinds in Mr. Wills' nursery at Anerley may be mentioned D. Euxestis and D. Sydneyi, both of which have gracefully-arching and highly-coloured leaves. A kind to be sent out shortly, too, named D. Jaconda, promises to be one of the very best kinds in the narrow-leaved section ever raised at Anerley.

Fruit Prospects in Kent.—These, at present, are very favourable, for, in addition to a protracted spell of frost and snow, we have had scarcely a break in the clouds for weeks together; consequently buds of all kinds are still dormant. We can scarcely now have an early spring, and, considering that fruit trees have not generally been heavily cropped for some years, we ought, if the season prove at all propitious, to have an exceptionally fruitful year in store.—J. G. Linton.

Hardiness of Erica gracilis.—This pretty little winter-flowering Cape Heath has borne the Arctic rigours of the present winter with perfect impunity, planted out and quite exposed to the sea breeze at Sorrento Lodge, Dalkey, the residence of Sir Francis William Brady, Bart. The only trace of the effects of the frost is the slight discoloration of the young growth at the extremities of the branches, which are densely clothed with its pretty flowers, fresh looking as possible, and much brighter and more highly coloured than those on plants of the same growing under glass.—"Irish Farmer's Gazette."

Crotons in Winter.—A large house devoted to these in Mr. Wills' nursery at Anerley is just now remarkably attractive. The plants, which consist of almost every known kind, are grown in the form of

pyramids—a way in which they are much more graceful and ornamental than when tied and twisted into baloon shapes, as is too frequently the case with Crotons. The variety and beauty of colouring in the leaves, too, is such as is rarely seen in any one place, and at this comparatively flowerless season of the year the effect of such plants is more striking than at any other time.

Seeding Amaryllises.—These make a fine show just now in Messrs. Henderson's nursery at Maida Vale, where a large quantity of them are in bloom, and some thousands of them are coming on in succession. Amongst them we noticed several fine new kinds, notably one named Virgin Queen, which is almost pure white, and therefore a great acquisition.

Gloxinias at Anerley.—These are now coming freely into bloom in Mr. Wills' nursery at Anerley. Many of the flowers indeed have already opened, which is unusually early for Gloxinias. The plants on which they are produced are remarkable examples of good culture. They were raised from seed sown in the early part of last year, grown on, flowered, ripened off early, and started into growth early in winter. Plants of such easy culture as these can hardly be too highly prized, as, under proper management, they afford a variety of richly-coloured blooms from February till the end of summer. In another house some 10,000 or 12,000 seedlings are being grown on for use next year, a circumstance which shows how highly Mr. Wills prizes Gloxinias for decorative purposes.

Gardeners' Royal Benevolent Institution.—We understand that Mr. Sergeant Cox has consented to preside at the next anniversary dinner in aid of the funds of this institution, and that he has appointed Wednesday, the 2nd of July, for that purpose. The dinner will take place at The Albion, Aldersgate Street.

Prizes for Auriculars.—We are informed that Mr. W. J. Barns, of Bristol, the maker of the patent square hand and cap glasses, proposes to supplement the prizes of the National Auricular Society's exhibition of April 22, next ensuing, as follows, viz., Class I, fifty plants, first prize, a 20-in. hand-glass; Class A, twelve plants, first prize, an 18-in. hand-glass; Class B, six plants, first prize, a 16-in. hand-glass; Class C, four plants, first prize, a 14-in. hand-glass; Class D, two plants, first prize, a 12-in. hand-glass; Class K, twelve plants, first prize, a 21 in. cap-glass; Class L, six plants, first prize, a 21-in. cap-glass; Class N, six plants, first prize, a 20-in. cap-glass.

NOTES FROM KEW.

Greenhouse Plants. The numerous and highly ornamental group of Rhododendrons which inhabit the high regions of Sikkim-Himalaya are now beginning to adorn the temperate house with their magnificent heads of blossom. The earliest amongst them is the Bearded Rhododendron (*R. barbatum*), so named on account of the long brown hairs with which the short leafstalk is thickly covered. The blossoms are large, of a very rich crimson with a dark centre, and are collected into dense globular heads, which terminate the branches. The Hairy Rhododendron (*R. ciliatum*), from the same region, shows the same peculiarity in the hairy leafstalk, though in a less degree; it is of dwarf habit. The flowers are 3 in. across, bluish-white, with striking brown stamens, and each head consists of six or seven blossoms. *R. procer* is a first rate shrub for forcing into flower early; it is very showy, dwarf in habit, and produces abundance of deep purple flowers. Gillies' Azara (*A. Gilliesii*), when not in flower, reminds one of some of the smoother leaved forms of the Common Holly; but the branches are tinged with red. The flowers are small, of a rich yellow colour, and produced from the axils of the leaves in oblong catkins 1 in. long. It is a native of Chili, where it grows at considerable elevations on the Cordillera of St. Iago, and forms handsome bushes from 10 ft. to 15 ft. in height. This extremely handsome shrub will also thrive and survive our average winters in the open air in some of the southern counties. Amongst the showiest of cool house climbers is the Toothed Hibbertia (*H. dentata*), a species with small oval leaves, possessing a ruddy tinge, and bearing a profusion of flowers 1 in. across, of a bright canary-yellow. The fact that it keeps in a flowering state during the greater part of the year much enhances its value. It is a native of New South Wales. The White-spotted-leaved Hamamthus (*H. albo-maculatus*) is a very desirable novelty from South Africa. The bulb measures 2 in. through, has green fleshy scales, and the leaves are three in number, leathery in texture, 9 in. long, 2 in. wide, blunt at the point, of a shining bright green, and studded here and there with white spots. The flower stem is short and stout, terminated by a dense head of pure white blossoms bearing yellow-tipped stamens. This, we believe, one of Messrs. Henderson's introductions.

Stove Plants.—The Palm house is at present enlivened by several kinds of Franciaca, small shrubs belonging to the Figwort family

and natives of South America. Amongst them are *F. eximia*, a kind with an erect, branching habit, lance-shaped leaves, and profusely studded with blossoms of a beautiful violet-purple colour fading to a lighter hue, each being about the size of a crown piece. *F. latifolia* differs from *F. eximia* in having broader leaves, smaller flowers, and a short calyx. The large-flowered kind (*F. macrantha*) is dwarfer in habit, and, as its name implies, it produces flowers of a superior size to the others. This, like the last, was found in Brazil. The value of these charming shrubs for stove decoration can scarcely be over-estimated, more especially as they are of such easy culture and flower so early, and by retarding the growth of some of them, a continuous succession of flowering specimens may be kept up for a long time. *Hebeclinium ianthinum* is a very handsome Mexican Composite, of bold aspect, having large, heart-shaped, coarsely-toothed leaves, and broad, terminal-clustered flower heads of a pale violet-purple colour, much resembling those of the common *Ageratum*. Though strictly a stove plant, this may be advantageously employed for the decoration of cooler houses, the plants for which should be grown in heat and introduced there when in flower. Two splendid species of *Strelitzia* have for many weeks past adorned the cool end of the Palm house with their gorgeous blossoms. They much resemble each other in general aspect, differing chiefly in the size and form of the leaves; both produce several flower stems that rise above the leaves and bear dense clusters of blossoms of most peculiar structure, of a deep indigo blue colour, accompanied by large-pointed floral leaves of a rich orange colour. Being of noble port, and producing flowers during many months of the year, they are highly desirable plants for greenhouse decoration, and are, moreover, very easily grown. Both are natives of the Cape of Good Hope.

Orchids.—In addition to those previously mentioned there are still several beautiful kinds that deserve notice, such as the large-flowered *Hydred Oacidium* (*O. acullatum* var. *grandiflorum*), which is a little gem in its way, and certainly one of the handsomest of the family to which it belongs. Its flowers, which are large, have sepals of a greenish colour, the lip being nearly the size of a shilling, white, and copiously spotted with purplish-rose. The blossoms last a long time in perfection. It is of South American origin, being found growing on the trunks of trees in shady forests on the western declivities of Pinchincha. There are several other beautiful varieties of this fine epiphyte, all highly desirable for cultivation. *Dendrobium lateolam*, a native of Moulmein, cannot be considered a showy kind, as its flowers are wholly cream coloured and unaccompanied by a vestige of foliage. A far more attractive and graceful kind is *D. Pierardii*, the blossoms of which have a yellowish tinge with the inside of the hooded lip more or less heavily pencilled with carmine streaks. They are produced thickly on slender, pendulous stems, thereby rendering the plant admirably adapted for basket culture. This elegant kind is an old introduction from Barmah. The long-leaved *Lady's-slipper* (*Cypripedium longifolium* syn. *C. Reichenbachianum*), though not showy, is remarkably curious. It has very long, gracefully arching foliage, and sends up branching flower stems bearing blossoms 6 in. across; they have long, narrow, twisted petals of a pale green, and a lip 2 in. long of a green and dull purple colour. The rare *C. Lowi*, from Brno, is also finely in flower. Its spreading side petals measure 5 in. across, and are covered with short hairs, the outer half being of a violet-purple colour the inner greenish copiously spotted with deep purple; the lip is also of a purplish hue. One of the most desirable of the *Lady's-slippers* is the hybrid *C. Sedeni*, as it is remarkably floriferous, and has almost continually several expanded blossoms on it. Though its colour is not showy, the violet shade of the whole flower is very pleasing. It is a cross between the small-growing *C. Schlimi* and *C. longifolium*. W.

Ill Effects of Using Creosote Paint under Glass.—I notice that one of your correspondents recommends that the under sides of the laths intended for the paths in Vineries should be tarred. Last autumn, having to make, some I had all the laths painted twice over with creosote. This was done in an out-house, and they were allowed to stay there for three weeks so as to allow the smell to pass off. The effect under glass was disastrous. Grapes that were hanging were so flavoured as to be useless, the leaves were burnt, and several stove plants standing there lost all their leaves, and, in some cases, died. I offer this as a caution to others inclined to try it.—W. B.

Dryopteris spectabilis.—If at this season, when this plant is pushing up its early growths, good strong clumps of it be lifted and placed in a very gentle heat, they will soon make beautiful plants for indoor decoration. Out-of-doors, a very sheltered position should be chosen for this plant, as, starting early into growth, it is liable to suffer from spring frosts.—J. G. Linton.

ANSWERS TO CORRESPONDENTS.

Finely-flowered Oncidium excavatum.—In answer to "An Amateur" (p. 173), allow me to say that, according to my experience of this species, I consider his plant to have bloomed unusually well. A small plant of it here threw up two spikes in November last; the larger of the two produced 250 blossoms, and the smaller one 190. It is quite probable that, had we removed the smaller spike in a young state, the larger one would have borne a much larger quantity of flowers. Does "An Amateur" use peat as his staple compost? If so, that may account for his obtaining so good a result. I find that this species does much better in peat than in anything else.—T. W. S.

Broken Mercury in Thermometers.—When thermometers get the mercury or spirits disarranged or broken up into several parts, there is no better way of rectifying them, than that I am aware of, than taking the upper part of the glass in the hand and giving it a few sharp swings in a downward direction, the swiftness of which is generally sufficient to at once force the atoms together again. I have had many thermometers out of order, and I never yet failed to rectify them in the above-named manner, and if your correspondent (p. 153) will adopt the same means, I have no doubt that he will be able to put the one he has, in a broken condition, into proper working order. If there be any difficulty with the index, a magnet applied to the tube just over it, and moved along, will cause it to follow, as it reaches the vacuum, where it will stop, a plan of setting that saves moving the glasses.—S. D.

Orange Trees.—The shedding of the leaves of Orange trees in the way stated (p. 153) shows clearly that something has gone wrong with the roots, and, as these are most likely diseased or perhaps dead, it will be advisable to shake out the soil and substitute fresh material. That most suitable for Orange trees is a yellow, fibry loam that has been stacked for a few months; to this should be added about one-tenth or so of its bulk of thoroughly decomposed cow manure that has got dry enough to be rubbed up fine so as to admit of being incorporated with the loam, and to which, if not naturally a little gritty, some sharp sand ought to be added to keep the whole porous. Before repotting, however, a thorough examination of the roots should be made; all the decayed portions, if any, should be cut away, and, in case of disease or fungus showing itself, it will be best to give them a thorough washing by repeated dippings in a bucket or tub of water, for, unless the fibres are clean, it will be next to impossible to restore the plants to health again. With the roots overhauled in this way it will be necessary to reduce the top, which may be done either by a general shortening back or thinning out of the branches. This effected, and the potting complete, the next thing is to plunge the plants somewhere in a gentle bottom heat, or to place them in any forcing house or mild stove, where they can be frequently syringed overhead and have the benefit of a mild, genial atmosphere. In such a situation Orange trees soon break and become refurnished, but, till they get some fresh foliage, the soil must have but very little, if any, water, or young rootlets will not be able to take to it kindly. In order to lighten the work which plants thus treated have to perform, any blossoms that show themselves ought at once to be taken off, as they are a great tax, more particularly if allowed to set and develop into fruit.—S. D.

Names of Fruits.—*D. L.*—Your Apple is unknown in Covent Garden; indeed in its present condition it is indeterminate. Can you send us a fruit or two of it in a sound state?

Names of Plants.—*Capt. M.*—*Senecio Petasites*, sometimes called *Cineraria plantaginifolia*. *Anon.*—Your specimens, without fruit or flowers, are difficult to name, two, however, are recognisable, viz, the *Ruscus*, which is *R. Hypoglossum*, and the little *Barbieris*, which appears to be *B. empetrifolius*. *W. C.*—*Asplenium falcatum*.

Books.—*Captain B. and R. F.*—"Hobday on Cottage Gardening," Macmillan, Belford Street, W.C.

Questions.

Magnum Bonum Potato.—Will some of your correspondents give their experiences with regard to this Potato? I had good seed, and was rewarded by a great yield; but the Potatoes are white, waxy, and watery—quite unfit to eat. A gardener 3 miles from here grew some with no better results, and they have been given to the pigs. Is this the fault of the Potato or the soil? and will it be of any use to give it another chance.—B. H. J. S.

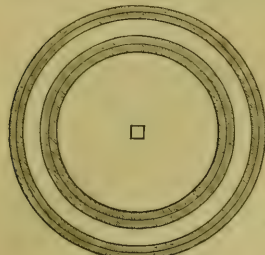
Monstera deliciosa.—Would any of your correspondents kindly tell me how best to grow *Monstera deliciosa* for its fruit? Would a three-quarter span roofed forcing pit, 12 ft. 6 in. wide and 16 ft. long, with a back wall 8 ft. high, be suitable for the purpose? How should I plant and train the plant to the best advantage? The house would face the south.—E. G. L.

Camellia Donkelaari.—What treatment should be followed in the case of this plant with the view of ensuring its having the flowers bloated. A large plant of it in my possession has had them self-coloured for twenty-five years. Thinking the variety which I possessed might not be true, I obtained a plant in bloom, which, after the first potting, went back to the self-coloured flowers.—T. B.

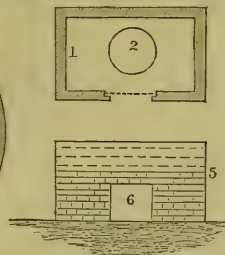
Growing Plants in Fruit Houses.—Will "S. D." (p. 94) kindly state the method which he employs to have *Lilium trigynum*, *Scitographis Giesbreghtiana*, and *Schizanthus Papiilionaceus* well in flower during the winter months.—M. F.

ICE HOUSES AND ICE STORING

THE annexed plan of an ice house may possibly be of service to those who are contemplating the erection of such a structure. It will be seen that the "well" is entirely under ground. About most places it would not be difficult to find a spot where the whole building could be thus sunk, and being under ground it is less liable to be effected by variations

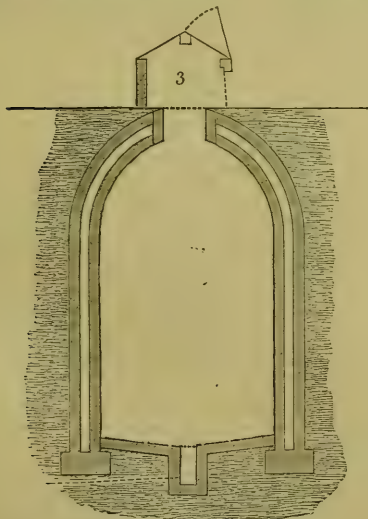


Ground plan of Ice Well.



Ground plan and elevation of small house over mouth of Well.

of temperature, and, moreover, the more effectually to guard against this, the "well" is constructed with double walls, between which a space is left to act as a non-conductor of heat to the inner wall from the outer wall and ground. The walls consist of 9 in. work, and the bricks ought to be laid in Portland or Roman cement. Some might think the inner 9 in. wall too weak, but if they reflect for a moment they will see that it is strong enough, inasmuch as the stored ice, unlike water or other fluids, has no lateral pressure, and, unlike the egg-shaped



Section of Ice Well.

"wells," the whole weight of the congealed mass presses on the bottom. The floor of the "well" ought to slope towards the centre, as shown in the annexed woodcut, in order that the water may be induced to pass quickly from the ice into a drain, where it may be found necessary to make one, as shown in the plan by the dotted line. The trap with which the drain is connected need not be very large; about 1 ft. square will be sufficient, and on the top of this an air-tight trap ought to be placed in order to keep back from the ice well any current of air which might enter it from the mouth of the drain. Over this trap a

few rough slabs should be placed, and over these should be put a covering of clean straw, which will prevent any sediment from getting to the trap and drain. The latter may consist of a 3-in. or 4-in. tiles, either of which will take away far more water than will drain away from the ice. Where, however, the ground is found to be gravelly or porous at the bottom of a well, I have no hesitation in saying that it is unnecessary to make any drain. A good large hole dug out and a few cartloads of rough stones packed into it, finishing off with a much smaller size, and laying on the top a good coat of gravel with the sand well taken out of it, will be found to be drainage enough in a porous bottom. It may be added that where the foundation is "sound" it is, in my opinion, quite unnecessary to concrete the bottom of an ice well. Turning now to the top, 1 is the ground plan of a small house to be built over the mouth of the well (2); 3 is a cross section and elevation of 1, showing a doorway in the roof into the well, through which the ice is to be obtained for use. On the ridge a beam ought to be placed lengthways, as shown in the section, to which a block and tackle should be fastened for raising the ice in buckets or boxes, and also for lowering and raising the person or persons who go down to fill them. The doorway will be found to be most convenient if made to open the whole length of the house, and it should form one-half of the roof; the other part of the roof would be best made of one large Yorkshire or Arbroath flagstone cut of sufficient strength to carry a few inches of soil on the top of it, as this side of the house, along with its roof and both the ends, could be easily covered out of sight. If the well were placed on a slope so that nothing would be seen but the front elevation (5) with its roof doorway, for the purpose described, and a small doorway (6) through which the well is filled from the shovels. It requires no barrowing along a passage, as close to the front of the little house a platform, either temporary or permanent, ought to be made, to which the ice is to be brought and pounded. This little door ought to be made as tight as possible to exclude air. A close-fitting trap-door ought also to be placed on the mouth of the well, which, by-the-way, can be filled to the top with ice. The little house should then be filled up with straw, the roof-door shut down, and all will then be finished. Thus far, I have tried to describe the accompanying plan of an ice-house, and to point out some of its advantages over those that are built about half out of the ground, and I think its superiority over either the "square" or "egg-shaped" forms will also be apparent, inasmuch as its storing capacity is greater than either of these, the circumference and depth being equal. It is drawn to the scale of 1-10th of an in. to 1 ft. As to the storing I have nothing to add to what Mr. Dennis recommends; as to the pounding of the ice, this can scarcely be too well done, but I do not believe in the straw up the inside of the house, and moreover a foot in thickness of straw all round the house lessens its storing capacity very considerably. I have a house to fill here, just such a one as that which Mr. Dennis describes, which I used to pack with straw, as he recommends, but I found the ice to keep no better, nor, in fact, not quite so well as without it. I store in this house sixty cartloads of ice every year when it is to be got, and it is consumed long before the summer is over. I also stack about 170 cartloads, which, when well covered, keeps for twelve months. This season there were about six loads of old ice when we began to put in the new. I may just add that I find light Oak mallets much better implements for pounding ice than sticks or clubs.

JAS. FAIRWEATHER.

Halston.

— Whilst thoroughly agreeing with Mr. Williams (p. 161) and others that ice may be safely stored in a "rough and ready manner," I cannot admit that it is a desirable method, unless the question of expense be paramount to all other considerations. Mr. Williams has said that he had nothing to add to my description of a well-constructed ice house (p. 59), and forthwith affirms that, as a rule, they are needless and often useless, and that the palm is to be bestowed on the "rough and ready manner." With regard to Mr. Williams' assertion that straw tied tightly in bundles is superior to the same laid in loose I entirely disagree. He says that "strawing ice wells is too often done in an ineffectual manner;" but surely that is no reasonable objection, as those who have charge of the work

should see that it is properly done. When well done, it will be found to be far better than straw packed in bundles, and it will act exactly in the same manner, as far as drainage is concerned. The central column of straw seems worse than useless, unless, indeed, the suggestion that ice should be stored without being thoroughly broken is adopted, in which case it would certainly be necessary. Ice, if properly packed, will, in melting, form a cone for obvious reasons, and thus insure drainage from the centre. That ice houses or pits should be constructed as near the water from which a supply is to be taken as is possible is self evident, and, therefore, my suggestion that a convenient spot in the pleasure-ground or wild garden should be selected for the purpose, as, in the majority of instances, in places which have been laid out with taste and judgment a lake exists either in the pleasure ground or in proximity to it; and although filling icehouses is rough work the approaches to them are generally in the best condition for carting during hard frost. By the term pleasure ground I include woodland walks, drives, bridle paths, and all other positions which may be used for promenades. With regard to filling I maintain that ice cannot be pounded too small, as therein lies the secret of success in preserving it in suitable structures. The ice becomes a compact mass in a short time, and may, if desired, be cut out in solid blocks for use. That Wenham Lake and other ices are imported in blocks is easily accounted for, blocks being convenient for transport. Some hundreds of tons of it are generally unloaded within two minutes walk of this park; this ice is usually for immediate use and not for storing any considerable length of time. There cannot be the slightest doubt that the method described by Mr. Williams of filling ice wells with ice and water would recommend itself where practical, but I venture to ask how often would an opportunity occur in our variable climate of carrying it out; perhaps once in twenty years? I speak advisedly so far as the southern counties of England are concerned; those in higher latitudes may be more fortunate in this respect.

Southwark Park.

CHARLES DENNIS.

THE KITCHEN GARDEN.

POTATOES WORTH GROWING.

The information sought by "J. D. H." (p. 151) is identical with questions which have been put to me scores of times in a twelvemonth, and no wonder, for the immense number of Potatoes that have been brought before the public within the last dozen years, nineteen-twentieths of which are worthless to eat, is enough to perplex anyone who has not had an opportunity of trying them, or seeing and tasting them as grown in different parts, and from different soils throughout the country. I may here remark, too, that I do not consider a Potato worth growing that requires to be coaxed into a condition fit to eat, by only planting it on the very best picked soil. Any Potato that will not come good in quality on such land as "J. D. H." describes, and where he grew his Rivers' Ashleaf and Victorias so good as he says, is a useless lumberer of the ground. For many years I made Potato-growing a hobby, and a few years back, when quantities of the new varieties came out, I began to grow all of which I could hear anything like a favourable account. Every one of the American sorts I had enough of the first or second year, except one or two, which on good Potato land are just fairly good and nothing more, being always too soft for my liking; and by far the greater portion of the English-raised seedlings I found of a like description, although almost all will find some one to recommend them. With those who have space and care to grow a quantity of sorts for the sake of novelty, or to mark the differences in their character, and have plenty of pigs to give the bad ones to, there is no objection to growing any number of kinds, but to those who only want such of the best as will give a supply all the year round, the interminable number brought under notice is a positive nuisance. There is not one of the very early round sorts that I would now grow, for the reason that I never yet met with any equal to the Kidneys. If "J. D. H." has one good Kidney, such as Rivers', of which he speaks, Myatt's, Veitch's Improved, or Lee's Hammersmith, Dalmahoy, York Regent, and Patterson's Victoria, he has all that anyone can require who wants a good-flavoured, dry, mealy Potato that, when well boiled, shows, by its glistening look, that it is full of starch, and this, I think, is about

the description that comes up to the standard which most people like. There are some, I know, who say they prefer the soft ones that stick to a knife like a piece of new cheese. Those who like the latter have no difficulty now in meeting with plenty of such as will suit them.

T. BAINES.

— Patterson's Victoria Potato, for which "J. D. H." (p. 151) substituted Climax, is one of the best Potatoes for winter use in existence, and I would recommend "J. D. H." to plant it again. Climax we regard as about one of the worst Potatoes for eating amongst all the American kinds; still, it is not naturally sweet, and probably those which taste thus may have been touched by frost. Rivers' Ashleaf, Gloucestershire Kidney, Early Mealy, and Patterson's Victoria are four excellent Potatoes for all seasons and situations. I do not think that it is generally known that Potatoes pretty smartly touched with frost will become as good as ever again if they are kept covered up and in the dark until they have become thawed. Some of ours were quite sweetened by the frost, but, owing to adopting the precautions just named, they have quite regained their natural flavour.

CAMBRIAN.

Winter Spinach.—When sown on a dry, warm border, about the middle of August, this is a valuable crop. It should either be sown thinly, or be thinned out at two operations—first, by drawing the hoe through it in the same way as turnips are hoed out; and then a short time afterwards, singling out the plants by hand to 7 in. or 8 in. apart. If the supply be required mainly for winter, it is better not to pick any leaves off in autumn, as that would, in a measure, retard and weaken the growth. If the plants have been allowed to grow on unchecked, there will be an almost unfailing supply in winter, which will prove invaluable in a season like the present. I have never known frost injure the prickly-seeded variety when grown on a warm, well-drained soil. Where green vegetables are much required, winter Spinach should be made a speciality, as it is sure to be in demand, and may be relied upon often when other crops fail in severe winters.—E. H.

Transplanting Onions in Spring.—Onions are often sown too early in autumn, and, as a consequence, are rendered more liable to bolt in spring. Some allowance should be made for latitude, but in most places the end of August will be early enough to sow Onions for transplanting, with the view of securing bulbs for summer use. I have at various times tried to ascertain, by experiment, if there were any advantage in transplanting at any particular period, or whether the autumn-planted crop, or those transplanted in February or March, did the best; and I have come to the conclusion that, except on dry, warm soils, the best time to transplant is in March, as early as possible after the first of the month. The removal from the seed bed to fresh, well-prepared land tends to encourage very rapid development and secures mild-flavoured bulbs. To obtain very large bulbs they must have plenty of space—9 in. or 10 in. square for each plant will not be too much, and this distance permits of the hoe being used freely in the early stages of their growth; but, if Onion beds are hoed after the bulbs begin to form, a very careful hand should hold and guide the hoe, as a very slight touch from the hoe or any other other implement may break the skin of the fast-swelling bulbs, and cause damage and deformity. In securing large bulbs for exhibition or other purposes, rich top dressings, accompanied by frequent waterings in dry weather, will play an important part, and must not be neglected by those who wish to excel. I saw very fine samples of a kind called Magnum Bonum at some of the exhibitions last year. It is globular in shape, and appears a remarkably fine variety, and likely to be a good keeper.—H. E.

Lettuces under Glass.—The glass roof in winter and early spring, whether it be a handlight, cloche, garden frame, or lights temporarily fixed, creates an artificial climate, and wards off, so to speak, the cold, cutting winds that usually do more havoc than still frosty air. The latter can always be rendered harmless by a thin covering of dry litter over the glass, which may remain on for weeks, if the low temperature continue, without the plants sustaining any material injury. It has been said that Lettuces do not force well. But how are we to define the term "forcing"? If it means simply forwarding crops by artificial means, then I say Lettuces can be easily forced; and I have always found that from this time onwards a little bottom-heat is of great advantage to them. Lettuce plants pricked out now on a bed of leaves, where a steady warmth can be secured for five or six weeks, will come on rapidly, and will probably fill up a blank and be highly appreciated. No doubt when, from a severe winter or any other cause, a scarcity of salading exists, a kind of express system of salad growing can be adopted by sowing Lettuces in boxes in a high temperature, and using them in a small state. The Early Paris Market I find the most suitable of the Cabbage kinds for this purpose, and any good white Cos follows well in succession.—E. H.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

NATURAL SITUATIONS FOR VIOLETS.

VIOLETS are ever welcome, and the demand for them is generally found to exceed the supply. Where wood and shelter in any natural form exist, there should be found Violets in abundance. The Mossy bank, the woody dell, are the natural homes of the Violet, and most readers of THE GARDEN will have vivid recollections of some such favoured spot, where they were wont in the sweet springtide to search for their flowers, laden with perfume and dripping with dew. Violets, shunning the free light and hot glare of the sun, retreat beneath the friendly shelter of some overhanging bough; there, nestling amongst the Grass, they are little affected by periods of drought, and grow freely and flower profusely. Where lies the difficulty in finding situations in pleasure grounds, where Violets would grow freely and increase in strength, extending themselves with each succeeding year? Such spots would not only be a source of interest in themselves, but would furnish such a quantity of bloom as would prove at times of great service. Some little care would of course be needed in the first instance, such as a little good soil in which to start them, and an occasional watering during the first season. There are some plants which never seem to fit into ordinary garden arrangements, and I have always considered that planting Violets in open flower-beds was inconsistent with good taste. They seldom look happy there, and often refuse to thrive. Violet culture in open situations requires experience, and a considerable amount of labour and attention, to bring it to a successful issue, especially in hot, dry summers; and the inexperienced, often failing to bestow the necessary care, are apt to make the complaint that they "cannot get Violets to last any time, the plants die off." Had some sequestered nook been chosen for them, screened from harsh winds and scorching sunshine, they would have shown their gratitude for the selection by an abundant harvest of bloom. In the more unfrequented parts of the grounds, where the scythe is seldom used, in the park and in the orchard, are to be found situations in which Violets would flourish and feel quite at home. They are impatient of confinement, but place them where they enjoy a free and constant circulation of pure air and they will grow and flower in perfection. Some of our newer kinds are strong growers and would undoubtedly naturalise well, but I do not see why even the most delicate should not be thus treated. I remember once admiring a large bed of that glorious double kind, so popular in France, called *Violet de Parme*. The plants had evidently escaped from some garden, and, running through a hedge, had established themselves in the Grass of an orchard, where they enjoyed the partial shade of some Apple trees. I never saw more healthy plants nor finer bloom than these produced, and their fragrance was something to remember. The hand of man had placed them in an unsuitable position, and they had instinctively discovered a new home for themselves. I have never forgotten that bank of Violets, and have never since seen anything so good. I do not think that Violets are very particular as to soil, so long as it is free and well drained; they never grow naturally where stagnant moisture exists. Soils of a loamy character, in which a considerable portion of decayed vegetable matter is present, are probably best, and when naturalisation is attempted on poor or sandy soils a top dressing of good mould might be annually afforded them, an amount of labour which they well repay. J. CORNHILL.

Byfleet.

Border Polyanthus.—These have stood the frost better than any other spring flowers, and, except the destruction of some of the old leaves, no harm has been done. Now nothing is showing bloom

earlier, all sorts, kinds, and colours are pushing into flower, but the earliest in all cases are the seedling plants of last spring. This is an indication that it is well to raise seedlings every year; the trouble of raising them is slight, and the advantage manifest. Not the least charm in the border Polyanthus is the great variety of colours which the flowers possess.—A. D.

HOW TO RAISE ANEMONES FROM SEED.

SUCH was an inquiry in THE GARDEN last autumn. The following method will enable anyone to raise them with complete success, provided the soil be suitable—namely, a moist loam. The seed may be sown at once. To save time I always sow it as soon as it is ripe, taking care only to select it from the very brightest-coloured flowers. First, as to preparing the seed; pains must be taken to separate it thoroughly. Spread a newspaper on the table, pour over it a quart of sand, or dry ashes, or fine earth; sprinkle the seed over this, and rub the two together till the separation of the seed be complete. As to the seed bed it need not be larger than 3 ft. by 9 ft. Choose the sunniest part of the garden. Dig and rake till the surface is very fine, tread it down, and give it a good watering. Wait until the surface is dry enough to scratch with a fine rake; sow broadcast, covering the seed about the thickness of a shilling; beat flat with a spade, and give a light sprinkling of water. Now comes the most important point in my method. Never let a ray of sunshine reach the bed; cover it with newspapers, spreading a few Pea sticks or something to retain the covering in its place. Keep the surface of the bed always moist. In about twenty days the young plants will begin to appear; when all seem up remove the covering, and no further care will be needed except watering. This must be strictly attended to, for if the bed becomes once thoroughly dry, the plants are apt, after forming small bulbs about the size of Peas, to stop growing, the foliage to die, and the bulbs to lie dormant for months, but if kept well watered through the summer they will go on growing all through the winter, and begin to blossom the following spring. Some young seedlings from seed sown as soon as it was ripe last year, removed to a box placed outside a south window, without any protection, are now (the end of Feb.) showing young blossom buds, and before March is out they will be in flower. The seedlings may either be left to blossom where they were sown, or be transplanted in September or October. Anemones are among the hardiest as well as the most beautiful of our hardy spring flowers. In spite of the late long and severe winter, a bed in my kitchen garden has never been without a few blossoms upon it. H. P. JESTOR.

GERMINATION OF PRIMROSE SEEDS.

THE germination of seeds is, as your correspondent says (p. 161), an important subject not too well understood, and a matter in which one requires oftentimes to exercise patience. For instance, I have at the present time two kinds of shrub seeds, just appearing above ground, that have been sown as nearly as possible two years. In the ordinary course of affairs many people, not understanding their nature, would have thrown them away at least eighteen months ago, and blamed their seedsman for sending them bad seeds. Your correspondent's account of his Primrose seed is a case in point; there is no ordinary everyday seed with which one requires to be more patient, and yet I should say that his plan of allowing the Primrose seed to sow itself amongst the weeds was one of the worst of all ways to get up a stock, for by this plan a large number would in all probability succumb to the exigencies of the situation. Notwithstanding this, he probably secured more than he would have done had he sowed the seed and kept it "nice and dry" till spring—another bad plan. The seeds of many kinds of Primula, if sown the instant they are ripe, will germinate at once, and make good plants before winter sets in. Others, if sown as soon as gathered, will remain in the soil till the following spring, and come up as regularly as Mustard and Cress (*P. japonica* for instance). In any case the seed is safer in the soil than in a paper bag, and much time is gained thereby, for, as in the case of *P. japonica*, if the seed be kept over till spring or until it has become thoroughly dry, it will not germinate for at least a year, and sometimes two; and the same holds good in the case of many hardy plants. The best plan is to sow at once as soon as the seed is ripe. Of course there are cases, as in those of seeds of easy germination, where this would not do, but in the case of all seeds where the period of germination is long or uncertain, sowing at once should be practised. A common error with sowers of Primula seeds is to cover them too deeply; as a rule they will come up much sooner if sown on a moist surface and kept so, than if they were covered, but the error is by no means confined to the seeds of Primula. Those of a large number of other plants are also lost through the same course of bad treat-

ment : almost any seed will grow on a uniformly moist surface, while many will not succeed if covered with soil.

Newry.

T. SMITH.

NOTES AND QUESTIONS ON THE FLOWER GARDEN:

Winter Aconites and Snowdrops.—Much has been written respecting the undergrowth of Beech trees. Where this difficulty really exists, I would recommend the above to be planted thickly, as, when seen in large masses, as at this place, they are exceedingly pretty at this comparatively flowerless season. They will thrive even where Grass will not grow under the densest of deciduous trees.—W. C. B.

Hardiness of Terrestrial Orchids and one or two other Plants.—It will now be very interesting to hear of the success or failure of *Dia grandiflora*, *Orehis foliosa*, various *Cypripediums*, *Sarracenia purpurea*, *Darlingtonia californica*, and similar subjects which have of late years been planted out in bogs or peat beds in cool, moist situations. The past few winters have been exceptionally mild, but the present one has been severe, and yet I am pretty well sure that the snowy covering which low-growing plants have had will have preserved many that would have perished if exposed to anything like the same amount of frost and cold cutting winds without the snow. It has always been a suggestive fact to me that, as a rule, aquatic and bog plants suffer less during frost than any others. During the past winter I have seen the Cape Apogoneton frozen hard in the ice, like a fly in amber in fact, for weeks, and yet the plant is now green and floriferous; *Sarracenia purpurea*, too, seems to enjoy a snow bath, being as fresh as ever. I am anxious about the scarlet *Dia*; perhaps Dr. Moore, of Dublin, or Dr. Wallace will give us some information respecting this anon.—B.

Japanese Methods of Packing Plants.—Those who have seen a shipment of Japanese plants unpacked cannot fail to believe that painstaking is a Japanese characteristic. Sometimes little baskets of split and woven Bamboo are used, in which the plants are closely packed, after having had Moss tied about the roots. The tops are protected by long Bamboo splints, and perhaps covered with straw matting and tied with straw rope. The most valuable plants are packed in long boxes, which outwardly present an appearance similar to those used in Eastern nurseries; but, whoever attempts to open them, will find a curiously elaborated system of wrought nails and almost unassailable fastenings. We do not think that the Japanese take sufficient care to secure their small painted labels to the plants. We have observed shipments in which half the labels were, on unpacking, found in the bottom of the box.

Lilies in Mud Balls.—Lilies from Japan usually arrive in perfect condition. This is owing to the method of packing. Instead of using sand, or sawdust, or dry Moss, the bulbs are "puddled," each separately in a thick clay mud, until each one is coated $\frac{1}{2}$ in. thick. Thin paper is, in most cases, then wrapped around to keep the mud from cracking off. These Lily mud balls are then packed in a box and some light material sifted in between them, and in this way they travel safely.—"Californian Horticulturist."

Hardiness of *Erica gracilis*.—This is not quite so robust a plant as the notice of it (p. 189) would lead one to imply. It is true that I have had it out of doors for two winters within a stone's throw of the sea, and without protection from frost, but between it and the sea blasts there is a bank of earth, which protects it from the fury of the winds. Thus situated, it has been more or less in bloom since Christmas. The snow has fallen round it, and, after a thaw, has been frozen into ice, but this bright little Heath has withstood all this hardship without injury. It is growing in a sheltered nook, protected from the north wind by a hill, and by the low bank which I have mentioned from the violence of the gales off the sea. *E. hymenalis* is also comparatively uninjured and in bloom out of doors, where it has been for two winters unprotected, except by a hedge, from the sea winds. There are many places in the south of England and Ireland much more favourably situated as regards shelter than this, and where, I have no doubt, many of the Cape Heaths would thrive well with suitable care. As to plants of any kind withstanding the full south-easterly gales off the sea, I know of very few indeed.—SARRENTO, Dublin.

A Handy Plant Frame.—Messrs. Rippingille, of 118, Holborn, have invented a frame which is likely to be much used when better known by those who wish to raise their own plants in spring for window or garden decoration where room is limited. The frame in question is so simple in construction, that it cannot readily get out of order. In the interior is a strong galvanised iron tank, extending the whole length of the frame, and about two-thirds of its width, covered

with stont slates on which to place the soil or plunging material. The water in the tank is heated by a patent oil stove, which will burn without attention for twenty-four hours. The products of combustion do not enter the frame, but all the heat available is completely utilised; the stove is disconnected from the frame for trimming, &c. The tops of the frames slide off either way. This is very convenient for planting or removing the cuttings, or ventilating. The heat can be regulated at from 70° to 90° Fahr., which is a temperature high enough for propagating purposes.—S.

GARDEN LABELS.

No doubt many cultivators will readily endorse the remarks of "Brookhurst" (p. 145) with regard to the want of durable plant markers, and more especially is the want felt where there is the naming of a large collection of hardy perennials to be kept in an efficient state, as we all know that it entails a considerable amount of time and labour to do it thoroughly. Durability is the main point to be looked for in labels required for the outdoor garden, where they are expected to stand all weathers, and many kinds, both patented and unpatented, fail to give full satisfaction in this important quality. This is strikingly apparent after the recent severe weather, for those made of terra cotta are nearly all broken asunder and shattered, and those with porcelain faces, mounted on iron legs, are very much injured by the porcelain falling from the iron. Labels made of wood, whether deal or oak, are not durable, even when the lower halves are previously steeped in tar or creosote, unless they are made of such a size as to render them very unsightly. The most durable written labels I find to be those made of strips of zinc, with the names written on them with sulphate of copper, generally known as indelible ink. These stand for a very long period, and remain perfectly legible. Putting aside the matter of expense, of course, the most efficient labels are those of iron, carefully painted with several coats of white paint, and the names written in black. These are only suitable for public gardens, as, from their necessarily large size, they form a very objectionable feature in those belonging to private establishments. The suggestion of "Brookhurst" as to the desirability of having progressive numbers to correspond with a catalogue, instead of the written names, is not new, but, in my opinion, should be practised more extensively. As far as my experience goes, the best material for this mode is lead, with the numbers stamped in it. These will last for generations, and may be altered at will, simply requiring the number to be hammered out, or the portion containing it to be cut off. Their cheapness is another and not inconsiderable recommendation, for by using what is technically known as 4-lb. lead, *i. e.*, 4 lb. to a square foot, the average market price being £1 per cwt., and by cutting the labels in a triangular form, 6 in. long by 2 in. wide, which is quite large enough for ordinary purposes, 336 could be cut from 1 cwt., costing about $\frac{1}{3}$ d. each, and, when discarded, they may be sold as old lead for half the original value. If stouter lead, such as 6 lb. or 8 lb. be used, and the labels of larger size, the additional expense would be but trifling. A set of $\frac{1}{4}$ in. number stampers is all that is required, and a man may stamp several hundreds in a day. A stout pair of scissors to cut the lead to the required size is of course indispensable. It is a general plan for a private grower to arrange the numbers corresponding with his own manuscript catalogue, but I think it a pity that owners of large collections of hardy plants do not adopt an analogous method to that pursued by British botanists in arranging their collections of dried plants for purposes of exchange, &c., that is, they follow one recognised printed catalogue, known as the "London Catalogue of British Plants," where there is a number accompanying each name, and, therefore, specimens of each person's herbarium corresponds with those numbers, thus facilitating very considerably the usual tedious task of reference, exchange, &c.

W.

Distribution of Fruit Trees and Seeds amongst the Working Classes.—In the annual report of the Grantham Horticultural Society, the members are congratulated on the success which has attended the Society's operations. The result, says the report, may in some measure arise from the annual gratuitous distribution of fruit trees of the finest kinds amongst the working classes, to which, last year, gifts of thirty-five collections of vegetable seeds, each containing fourteen varieties of Sutton & Sons' stocks, were added. During the present winter a double distribution of trees (268 in number) has been made, Lord Brownlow and Sir W. E. Welby-Gregory having very kindly contributed to that special fund; and it may be added that the late Mr. Ostler contributed towards the seed distribution fund. The total number of trees that have been distributed is 818, and in this work the clergy and others have given very valuable assistance.

TREES, SHRUBS & WOODLANDS.

THE WOOD OF CONIFERS.

THE wood of most Coniferous trees may be distinguished even in the dark, at least, when recently cut, by its strong odour of resin. Moreover, its lightness for bulk serves to distinguish it from most kinds of timber in common use, and then a cross section of a trunk does not exhibit prominent medullary rays



Fig. 1.—A vertical section of the wood of the Spruce Fir. The longitudinal cells are studded with bordered pits, and a portion of the tissue of a medullary ray is shown in the middle of the section, traversing the longitudinal cells. Very much enlarged.

—lines running from the centre to the circumference—characteristic of the Oak and numerous other woods. Nevertheless, although inconspicuous, they are present; but Coniferous wood may almost invariably be recognised when highly magnified. A longitudinal section of the wood shows something like the accompanying figure, that is to say, the cells are studded with disc-like markings, called bordered pits. It should be mentioned, however, that this kind of marking, though characteristic of Coniferous wood, is not absolutely

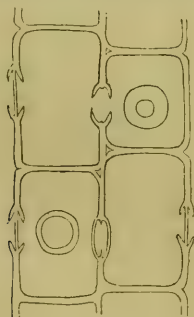


Fig. 2.—Diagrammatic representation of the formation of bordered pits of the spruce Fir. The circles represent sections of bordered pits.

peculiar to it; indeed, similar markings are not uncommon in the tissue of herbaceous plants. These bordered pits originate from an unequal thickening of the cell wall. Spaces of the wall remain thin through very little of the thickening matter being deposited thereon. As the thickening of the other parts proceeds in two contiguous cells from the inside, it is projected from both sides of the thin part until the two projections nearly meet as an arch over the thin part. This occurring on both sides of the thin part separating contiguous cells, there are eventually two nearly enclosed spaces separated by the

original thin part. Should the wood cells lose their protoplasm (the active or vital substance), and the cells become filled with air and water, the thin partition is destroyed, and thus there is free communication, through the circular openings of the pit, between the cavities of adjoining cells. Seen from the front, the thin part and the thickened dome, with its orifice, appears as two concentric circles (fig. 2). Associated with this peculiar structure, in Pines and Firs, at least, is a remarkable substance, the value of which has only quite recently been determined. This is coniferin, which occurs in the cambium liquid or elaborated descending sap. It was first discovered by Hartig, in the Larch, about twenty years ago. It is obtained by boiling, filtering, and inspissating the sap to one-fifth of its volume, from which, after cooling, the coniferin separates in crystals, which have to be pressed and recrystallised from water or alcohol, with the addition of animal charcoal. Treated with chromate of potash and sulphuric acid, coniferin is converted into vanillin or vanillic acid, the aromatic principle present in the seed vessels of Vanilla, for which it appears to furnish a perfectly efficient substitute. During the past two years coniferin has been collected for this purpose in North Germany by hundreds of pounds. The price varies from 50s. to 60s. per kilogramme, and the operations of collection and preparation can be easily and economically performed by women. When the trees are cut down in spring or summer the branches are at once lopped and the trunk stripped of its bark; the trunk is then scraped with a sharp instrument and the sap is collected in sponges and expressed into pails. A healthy tree, of medium size, yields from 7 to 9 pints of sap, and each pint of sap contains from 100 to 125 grains of pure dry coniferin. W. B. HEMSLEY

ORNAMENTAL FORESTRY.

THE department of the planter's labours which more than any other displays his taste and judgment, is the selection and disposition of his single trees, and the arrangement of his small groups or clumps; for, while large masses of plantation should be characterised by simplicity, groups require variety, which may be obtained in one place by an admixture of species, in others by the arrangement of the trees in close or open order, or by differences of height, foliage, and general habits of growth. Wherever the area to be planted has been obtained from arable or pasture lands by the removal or grubbing of hedges and laying field to field, the necessity for planting single trees will seldom exist; here the difficulty will generally be so to thin out and group the remaining ones, as to eliminate their hedgerow character, and, at the same time, maintain the continuity of the plantations. As I have before remarked, the close-headed tree is by no means the most picturesque; its effect, like that of a very dense plantation, is lumpish. Those which give alternations of canopy and recess, and consequently of light and shade, are to be preferred in most situations, and for landscape effects trees with pendulous branches, twisted trunks, and contorted arms, as the Wych Elm; with sweeping and recurvate branches, as the Ash; with towering tops and wide-spreading and sweeping base, as the Silver and Spruce Firs; with a glorious mass of blossom, even though somewhat close-headed, as the Horse Chestnut; with overhanging and receding branches, as the Plane and Sycamore; and the Poplar, in some situations, are much more serviceable. The play of the branches in these gives endless varieties of light and shade, while very dense and close heads maintain nearly the same uniformity throughout the greater part of the year. Wherever dense shade is required, the planter can have recourse to the Beech, Spanish Chestnut, Oak, Elm, and Sycamore, all of which are highly effective, and upon good soils produce stately single trees. As subjects for landscape effects by means of pollarding, he has the Ash, Willow, Oak, Elm, Lime and Poplar; for giving seclusion the Spruce Fir and Scotch Pine, as well as the Larch, Willow, Poplar, and Birch, which may be cultivated with undergrowths of Holly, Yew, Hazel, Portugal, and Common Laurel, Dogwood and Box, or, if within the direct influence of the sea, the Elder and the Sycamore. For beauty of form combined with odoriferous qualities, there are the Birch, the Plane, and the quick-growing but short-lived Balm of Gilead Fir.

It is unnecessary, and, indeed, impossible, to particularise trees best adapted for standing singly in the various situations for which the aid of such ornaments is required. The planter must be guided by the character of the place as well as by the soil. To attempt to lay down rules without considering the real requirements of the situation would be like naming a tree for introduction to a landscape painting and at the same time utterly disregarding its accessories. Thus, the straggling ramifications of the Spanish Chestnut, which flourished upon the mountains of Calabria, where Salvator Rosa painted it in all its stages of decay, eminently fit it for the wild and desolate scenes into which he has introduced it, while the beautiful forms and the profuse foliage of the trees in the groups of Claude are equally well adapted to the rich balustrades which they overhang and the magnificent columns and porticos with which they are intermixed in his paintings. The Spanish Chestnut, as a single tree, is highly effective in park scenery, particularly where there are groups of Oak, with which it harmonises in colour, while the forms of its branches and the twisted trunk, the deeply-furrowed bark and the size of its leaves, produce the necessary variety. In July the heaviness of its head is relieved by the blossoms, which appear upon long catkins, and are followed by spiked clusters of the liveliest green, from which the seed is obtained in autumn. The Horse Chestnut has a growth so close and compact that its head would appear intolerably heavy, with its foliage in a round mass, quite destitute of lightness and airiness were it not for the profusion of pink and white flowers which adorn it in May. In a foreground this tree, even in full bloom, cannot be considered otherwise than as a glaring object; for, though each flower is intrinsically beautiful, the effect of the whole mass is heavy from want of variety. Its proper place is amongst a mass of other trees, to give density to distant scenery, or it may be serviceable to screen objects near at hand.

The Lime is seldom seen to perfection as an avenue tree, where it is generally clipped or elbowed and thus disfigured; but when allowed free growth it forms an elegant tree. Its warm tints give it a charm in winter, particularly in a snow scene. The variegations of the stem of the Birch, consisting of patches of brown and white intermixed with long stripes of a silvery lustre, the deep brown of its spray, combined with a lightness and elegance of form and graceful foliage, eminently fit it for the lawn and the park. In old age its bark becomes rough and furrowed, and generally uniform in colour throughout. The Acacia is too brittle for situations of great exposure, and its liability to accidents from storms makes it a tree not to be depended on for any length of time, either as a screen or an ornament. It should be planted only in situations fairly well sheltered. The beauty of its blossoms, the rapidity with which its quick growth repairs damage done to it by wind, and the luxuriance of its growth from suckers when planted near water are its greatest recommendations. The Plane and Sycamore are often highly picturesque in their forms of growth, and the effect is considerably increased by their habits of scaling or throwing off their bark in large flakes. Their leaves receive and reflect great masses of light and both kinds afford good shade, which, in the case of the Sycamore is almost impenetrable. The Walnut retains its leaves for so short a time that it is best planted singly or in groups unmixed with other trees. The warm russet hue which it assumes in May renders it highly effective as a contrast to the almost universal verdure which prevails at that season. The ramifications of its branches render it one of the most beautiful and interesting of deciduous trees, the blunted and partially-rounded ends contrasting well with the lighter and more graceful spray of the Beech and Elm. In the Beech the trunk is generally the most picturesque part, as it is often deeply fluted, while its smooth bark is generally variegated with irregular patches of Lichens. The beauty of its head is often marred by branches which shoot out in straight lines. A young Beech is, however, generally a free-growing and elegant tree. In its autumnal dress of sober brown and glowing orange, which often only partially hides an inward wealth of lingering verdure, it presents a contrast to the Horse Chestnut, upon which the outermost leaves are the last to turn yellow and drop off.

The pendent branches of Wych Elms sometimes give to their heads the most fantastic forms, producing the perfection of jutting promontory and reeving cove, aspects which are frequently heightened by accidents to the branches in consequence of their brittleness. In the production of masses of light and shade the Common Elm far surpasses both the Oak and the Ash. In situations where this tree either connects other plantations or breaks their abruptness it harmonises better than almost any other with the Fir tribe during the summer, and with the orange of the Beech and the russet of the Oak in autumn. Upon a good and suitable soil it also rises into a stately tree. In the Ash beauty of foliage generally accompanies elegance of form. The way in which the branches first start off with a growth close to the stem, then gradually assume a graceful sweep, often ending with a recurvate form, is highly effective. When fairly sheltered, the Ash retains its leaves of a lively green in a mild autumn longer than most other trees. It is seldom very handsome in old age, as the new growths which start from broken branches and from the trunk after accidents do not harmonise with the ruin.

The Oak combines in itself stateliness of form when young, with majesty in its prime, and grandeur in old age. Its head is fairly light and open. When the young tree is unpruned, the branches appear to divide the trunk instead of merely springing out of it, and this gives it a distinctive character. Whether as the aspiring young tree, the king of the forest or the "unwedgable and gnarled Oak," this tree everywhere commands admiration. After a severe winter and a cold spring, the Oak comes into leaf before the Ash, but during a warm spring the Ash, which is shallower rooted, sooner feels its influence and bursts forth first.

A. J. BURROWS.

GLOSSY-LEAVED LAURUSTINUS.

(VIBURNUM LUCIDUM.)

OF the numerous varieties of the Laurustinus, this has the boldest foliage and the largest flowers, and it has altogether a more robust habit of growth than the ordinary varieties. At the moment of writing I have not fresh specimens of this fine Laurustinus before me, but among the numerous dried specimens of Laurustinus in Kew herbarium, there is one of lucidum collected by the late Dr. Bromfield in the Isle of Wight. It is so distinct from all the others in its larger flowers and smooth shining leaves of great substance, as to at once attract the eye. Bromfield collected it "from a finely flowering and very large bush in the grounds at St. Clare, Ryde, February 5, 1846." There it appears to have developed its full beauty, and I believe this shrub can only be recommended for the southern and western parts of the kingdom. My experience of it in the heavy soil of the weald of Sussex is that it is less hardy than the common Laurustinus, but on the chalk it succeeds perfectly. In fact, all the varieties appear to flourish well in chalky soil, and I never saw more floriferous and healthy examples than those growing almost on the bare chalk near the sea in the south of England. Loudon says of this variety, "When the winters are sharp, the flowers are killed, and never open unless they are sheltered." He adds that it is a native about Algiers and on Mount Atlas, which would account for its being tender. With regard to its native country, Lawson is probably right, for the wild specimens in Kew Herbarium, nearest this, are from Morocco. This variety is also called grandiflorum in some gardens. It is noteworthy that a shrub which has been cultivated in British gardens for a century or more should remain comparatively rare, and it is also singular that it should never have been figured before. Probably this is not only because it is not so hardy as the common Laurustinus, but also in part due to the fact that it is not so easily propagated. For several reasons, independently of its constitution, this variety should nowhere altogether replace the ordinary one. It does not usually flower so freely, neither does it flower so early, and its flowers, though larger, are not so suitable for cutting, on account of the stoutness and rigidity of the branches. Again, it is of taller growth, and does not form the neat, dense bushes of the ordinary Viburnum Tinus. The specimen from which the annexed illustration was prepared was supplied by Mr. Scott, of Merriott, Crewkerne, Somerset.

W. B. HEMSLEY.



LAEGE GLOSSY-LEAVED LAURUSTINUS (*VIBURNUM LUCIDUM*).

CAMELLIAS OUT-OF-DOORS.

I THINK it will probably be found that Camellias are hardly less hardy than the common Laurel in any part of the country, but whether they will bloom successfully, or with any degree of certainty is another matter. I presume the prospect of flowers is the only inducement to make the Camellia an outdoor shrub, for there are plenty of other shrubs that are quite as handsome and more readily procurable for forming shrubberies. We have a plant of the old single red variety that has been growing outdoors here for forty years or more. Whether it has at any time been killed down or cut down I do not know, but it seems to have been cut back once to near the ground. I have, however, known it for fourteen years, and it had not been meddled with for a long period before that as far as any one can remember. I moved the plant about ten years ago to an exposed south border, and it is now a squat-headed bush about 5 ft. high, and always sets a great quantity of buds, which expand freely after mild winters. The plant is in perfect health at the present time, and does not appear even to have been browned, as some of the Portugal Laurels have been. I doubt, however, if the buds will expand, as they appear to be black in the heart now, though, to all appearance, right enough outside. I believe this same plant was mentioned by Harrison, some forty years ago, when he was gardener here, either in the "Transactions of the Royal Horticultural Society" or in the old "Floricultural Cabinet," of which he was the conductor, and then, as now, the hardiness of the Camellia was under discussion. When I was at Drumlannig Castle there were several Camellias of a good size planted against a north wall and in good health, though, so far as I remember, they did not flower during the five years I was there. They were only protected by a mat in winter, and the thermometer frequently dropped during hard weather nearly to zero. In Dorsetshire, I am told, the trees frequently bloom pretty freely, though the frosts are severe enough in winter sometimes to kill the Broccoli in the kitchen garden quarters. A few years ago I saw a shrubbery of Camellias in a garden not far from Bournemouth. I think there can be no doubt about the hardiness of the plant, but the question is, Is it worth while planting it out-of-doors except in situations where it will flower freely?

J. S. W.

—It would be unfortunate if the remarks made (p. 177) upon the present appearance of Camellia buds on plants in the open air, should deter any one from planting these noble and singularly hardy ornamental shrubs. That the flower buds may after the recent severe weather be damaged to some extent there can be little doubt, but then how many other hardy shrubs have suffered in a like degree. Have we not often had seasons, when even the hardy Rhododendrons have had their flower-buds almost destroyed, and yet who would make this an objection to planting them as much as ever? Most people who have Camellias in the open air, find that they flower freely and well five out of every six years, and that the plants are perfectly hardy—indeed, much harder than many shrubs that make their new growth early in the year. Rhododendrons, Laurels, and many kindred shrubs, often have their young shoots cut back by late spring frosts, but this does not happen in the case of Camellias, simply because their young growth is made later, and is thoroughly ripened and seasoned by the summer's sun. A free exposure to sunshine is not essential; indeed a little shade during the hottest parts of the day is rather beneficial than otherwise. The greatest enemy to the flowers is fierce winds, which beat them about; but then all flowering shrubs are subjected to the same danger when storms abound. Any one planting out Camellias for the first time, will do well to plant first some of the commoner kinds, and in somewhat sheltered situations; then, when these are seen to thrive, continue with more valuable sorts, and extend the radius of exposure. In this way both experience and confidence are gained. The soil should consist of a good admixture of peat and a little rotten manure, but it is not desirable to excite rank growth.—A. D.

—I have seen a very fine specimen of the old double white Camellia in front of a private residence in High Street, Battle, beautifully in flower, the blooms being quite as perfect, as regards form, as those grown under glass. It would be best to plant Camellias against a wall in situations where they required protection, as in that case it could be more effectually applied.—A. H., *Keyley*.

RABBIT-FENCES AND FRUIT-TREE PROTECTION.

I AM afraid we rather underrated the rabbit's powers of leaping, a question which determines, to some extent, what sort of fence will be required to keep them out of places where they are not wanted. I have seen a rabbit jump up upon the top of a stone fence 3 ft. high, and jump down on the other side, and it had not been driven or frightened in any way. We have had considerable trouble with them

here, both in the woods and pleasure-grounds, and to test their abilities in getting over a wire fence, I enclosed some young wild rabbits about a month old, and just tame enough not to be frightened at any one's presence, within a ring fence of galvanised wire, 2½ ft. high, set up with stakes on the Grass in front of my house. They were hardly two hours in this before they were out again; they were put back over and over again, always with the same result. They scrambled up the wire like a cat, and let themselves tumble over on the outside. Whether rabbits would act in the same way, if they wanted to get to a plant, I do not know, but it is quite probable they would, if pressed for food. The suggestion of "A Soldier" (p. 168), to lay a piece of wire flat on the ground in erecting wire fences is a good one, but it is better simply to bend a piece of the upright sheet of wire out than to put down a separate piece, as holes are apt to be made at the junction. Such a fence is better than a stone wall. Rabbits are sometimes very troublesome in orchards during severe winters, gnawing the bark off the stems of the trees and killing them. In such cases, when the trees are not over numerous, wrapping the stems round with paper, just a little higher than the rabbits can reach by standing on their hind legs, will be found an excellent and perfectly effectual preventive. The paper should be tied on pretty securely, otherwise the winds and rains will tear it off.

D.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS

Gorse or Furze.—Land intended for Gorse seed should be prepared much in the same way as Turnip land, that is, deeply stirred and finely pulverised; it should also have a dressing of good lime compost or a little well-rotted manure where a quick growth is desired, though it is a plant that will eventually flourish even upon a poor soil. From the middle to the end of April about 4 lb. of good seed per acre may be either sown or lightly drilled in; this will be found sufficiently thick either for cover or for cutting as food for stock. Where Gorse is intended to form a hedge about 1 lb. of seed to the 100 lineal yards may be sown upon the top of a well-worked ditch bank. This plant is more permanent if it be not allowed to seed, and the best time for trimming it is directly after the flowers are shed, generally about the middle of June. During the severe weather of the present winter rabbits have in many places made great havoc among the young Gorse of last year's sowing.—A. J. B.

Sowing Broom Seed.—Most kinds of Broom, but more especially those of the largest growth, known as Portugal Broom, flower early in May, and ripen their seeds by September; and the sooner these seeds are committed to the ground after they have been gathered, the better plants will they make the following summer. They may, however, be sown with Gorse in the spring, or transplanted amongst it as seedlings. It is difficult to say in what proportion these seeds should be sown together for ornamental purposes, but we would recommend a trial of 1 lb. of Broom to 3 lb. of Gorse.—A. J. BURREWS.

Spruce Fir Timber.—In alluding to useful Conifers (p. 143) "S. D." speaks of the Spruce as a worthless timber tree. This surely cannot apply to the Norway Spruce! The Spruce will thrive and produce useful timber on boggy ground, where few other trees will succeed. As a shelter or nurse tree, too, at suitable elevations, it is of great value. In Scotland and in Ireland the thinnings of Spruce sell as readily as those of Larch for fencing purposes, and for pit props. For roofing farm buildings Spruce has long been used in Scotland. I need hardly speak of the value of imported Spruce timber for scaffold poles, spars, masts, white deal, Baltic deal, &c.—CHAS. McDONALD, *Garden House, Stokesley*.

Cercidophyllum Japonicum.—This very rare and choice tree was, as far as I can learn, first introduced to America by Mr. Thomas Hogg, who sent it from Japan to his brother, Mr. J. Hogg, of New York, at least as early as 1863. This very tree stands in Mr. Hogg's garden at Harlem to-day; and its ornamental value, as there indicated, is very great. The outline is pyramidal and the foliage rich, glossy and beautiful, resembling the heart-shaped leaves of the Japan Judas tree, only smaller. Indeed, we may reasonably expect that the attractions of the Cercidophyllum will, in time, gain for it among deciduous trees a reputation similar to that possessed by the Japan Judas tree among shrubs. At present, however, it is almost, if not entirely, unobtainable in this country. Practically it cannot be grown from cuttings, and little or no seed seems to have been sent from Japan. An anomalous tree, its relations with other plants are peculiar; for, though said to be of the Magnoliaceae, it cannot apparently be grafted on any stock known in America.—"Rural New Yorker."

PLANTS AND FRUIT FOR MARKET.

CURCULIGO RECURVATA.—This is a plant which sells readily in the market, but at present it is rather scarce. It will, however, in time probably be one of the most extensively cultivated of ornamental-foliaged plants. Its leaves are beautifully recurved, bold, and striking, and well-grown plants of it in 6-in. pots, furnished with from six to ten leaves, make admirable subjects for vases, dinner-table, and similar decorative purposes. Its enduring properties constitute one of its chief advantages. There is also a variegated variety of it, but this is more tender than the type and, as yet, too expensive to be remunerative. Indeed, it is a question if ever it will be appreciated as much as the green-leaved form. The *Curculigo* is increased by means of offsets, which are thrown up from the roots of old plants. These are torn off, placed singly in small pots, and plunged in a brisk bottom-heat; when well rooted they are potted, after which water (overhead and at the roots), heat, and air are all that are required in order to induce the plants to grow rapidly. In eighteen months excellent marketable specimens are obtained, and sometimes in much less time, and, as the plants take up comparatively little room and fetch high prices, their culture is remunerative. Any good soil, well drained, suits the *Curculigo*, but rich fibry loam mixed with leaf-mould or rotted manure and a little road or silver sand, makes the best compost for it.

CROTONS.—These are good market plants, but they are not generally grown to the same extent as *Dracenas* or *India-rubber* plants. Some of the old kinds, such as *C. variegatum*, *C. undulatum*, and *C. Weismanni*, are those principally grown at present, but there has of late years been so many new and attractive kinds with long, gracefully-drooping leaves that we may expect *Crotons* soon to rank among the most popular of market plants. They are increased by means of young shoots, the points of which have been previously pinched out and have again started into growth. In this way, bushy tops are obtained, which, when taken off and placed in small pots, soon take root, and in twelve months make handsome little plants. Heat and moisture are the chief essentials to success, as, in order to have well coloured leaves, too much heat can scarcely be given them, provided moisture is supplied accordingly. *Crotons* are, however, not good room plants, as the effects of gas soon cause them to shed their leaves.

FICUS ELASTICA.—Of all plants grown for their foliage for market purposes this is the most popular. It is the best London window plant in existence, and a plant which will grow and keep healthy in the same pot for years if well supplied with water. Nearly every florist around London grows as many plants of it as he has room for, and yet it keeps up its price in the market. It is propagated by means of young tops of growing shoots, which are taken off and struck in the same way as those of *Dracenas*, old plants being generally grown to provide them.

YELLOW-FRUITED CAPSICUMS are now grown for market purposes, and sold for decorative purposes alone. The seed is sown early in spring, say in March, in pans or shallow boxes, placed in a gentle bottom-heat. When up, the seedlings are potted and grown on in a warm pit or frame. They fruit ten weeks after sowing, and have a very effective appearance, especially when associated with scarlet-fruited kinds. When grown close to the glass, and allowed plenty of air, they form dwarf, shrubby plants, 12 in. or 18 in. high, each bearing from thirty to forty shining yellow fruits, which last in beauty for several months.

CYPERUS ALTERNIFOLIUS is also a favourite market plant; it is easily increased by division of the roots, and it can also be raised from seed. Heat, rich soil, and water are its chief requirements. The variegated kind is seldom seen in the market.

Myrtles, Scented *Verbenas*, *Ardisia crenata*, and *Coleus* are all grown for market, the two former being always in demand.

GREVILLEA ROBUSTA.—This is a capital market plant, and one which is much valued for room or table decoration. It is raised from seeds imported from Holland, which, if obtained new and good, soon germinate. It is sown in heat early in spring, and the plants are potted on until they occupy 6-in. pots, when they are placed in an intermediate temperature until they attain a height of from 18 in. to 20 in., when they are sent to market. Seed sown at the time named produces good marketable plants in autumn, which is the time when they are most plentiful.

Hardy Shrubs.

Green-leaved *Euonymuses*, *Yews*, *Retinosporas*, *Arbovitæ*, and many other compact-growing shrubs are sold by thousands for window decoration during winter. The Golden *Yew* is a favourite plant, as are also the green and golden-leaved *Thujas*. Most of these are imported from France. Many thousands of *Thuja aurea* are, however, raised from seed yearly, and one grower near London has a method by which he can get the seeds to germinate in a few weeks. When once up the plants grow rapidly, and, by being potted on, soon make handsome little bushes which never fail to find a ready sale at remunerative prices.

EUONYMUS JAPONICUS and its golden variegated variety are grown by the thousand in cold pits, and good, bushy plants of them in 5-in. pots fetch from 12s. to 18s. per dozen. *E. radicans* is also grown for the beauty of its foliage. *Euonymuses* are easily propagated, and soon grow into saleable plants. They withstand the dust and smoke of London better than most other plants, and on this account are readily bought up for the decoration of balconies and window-sills. Cuttings of them strike readily, and, if grown on in a warm house or frame, soon become bushy little plants.

ACUCUBAS.—These rank amongst the most important plants in the outdoor department, and many valuable seedling varieties of them have been raised by market growers. They are chiefly grown in pots, and by introducing male plants amongst them they become loaded with large clusters of brilliant scarlet berries. The variegated form, too, may be found heavily laden with berries, and at Christmas time such plants find a ready sale at high prices. When standards are required, grafts of a free-fruited kind are placed on stocks of the common variety, grown to the desired height. By this means handsome plants with fine round heads from 2 ft. to 3 ft. in diameter, and studded with scarlet berries, are rapidly obtained, and fetch from 10s. to 15s. per pair in the market. Young, dwarf plants of *Acubas* are obtained by pegging down on the ground branches of established plants; in this way they soon strike root. They are then severed from the parent plant, potted, and placed under cover to come into bloom in order to be fertilised. After the berries are well formed, the plants are taken into a warm temperature in order to get the berries well coloured.

Fruit.

The demand for fruit in this country has during the past few years increased to an enormous extent. Both for hardy and indoor fruits there is always a ready sale, and,

notwithstanding that the quick and cheap means of transit enables Continental growers to send their produce to London in such large quantities and in such good condition, the extension of fruit culture in England is on the increase. It would be difficult to form any estimate of the amount of fruit consumed yearly in London alone; but that it must be something enormous we may judge from the fact that nearly £6,000,000 is yearly sent out of the country for foreign fruits. If we suppose that London consumes only one-twentieth of this, it costs us £300,000 to supply the metropolis with fruit, irrespective of what we ourselves produce. Forced fruits from France and the Channel Islands come at times to our markets in such quantities as to render English produce anything but remunerative, and it is only by attentively watching and ascertaining the requirements of the markets at all seasons of the year that our indoor fruit growers can make that industry profitable. The price paid now for fruits deviates but slightly from that paid half a century ago; although the quantity which we receive is fifty times greater, yet the demand has increased accordingly, and thus the price has been kept up. Much has been written on the subject of the extension of fruit culture in England as a profitable industry, and, whilst some have recommended our railway embankments, which, at a rough estimate, represent nearly 200 square miles, to be planted with Apple trees, Pears, or Cherries, the fact seems to be overlooked that in a plentiful fruit season the grower's profits are almost trifling compared with those realised in a year when the crop is only moderate. It has been said that a profit of £100 per acre can be obtained by fruit culture, and that such an amount has sometimes been realised there can be no doubt, but seldom of late years has that been the case. Even in a plentiful year hundreds of bushels of good Plums, Apples, and similar fruits are allowed to rot because the market is so well supplied from abroad that they would not pay for the gathering.

Early Plums have been tried on a large scale by several growers near London, but, when we look at the present state of the market, this seems a bad investment, because, in the first place, the blossoms of early Plums are fully expanded just when spring frosts, of which we have had ample experience during the past few years, overtake them, and the consequence is only a partial crop. Then, in the second place, suppose the crop to be a plentiful one, the fruit is ripe just at the time when the "glut" comes from abroad, and the prices are, therefore, low. Now, if late Plums, to come in after the bulk of the foreign produce is over, were grown, there would be a good chance of profit arising from their culture, because the blossoms would be more likely to escape spring frosts, a better crop might be depended upon, and the fruit, being fresher and in better condition than that from abroad, packed in barrels and tubs, would meet with a readier sale at remunerative prices.

To Apples and Pears the same remarks, to a great extent, apply. When, in plentiful years, there is a "glut," the price obtained hardly repays the cost of gathering, storage, and cartage; therefore, the best fruits are kept back until later in the season, when sound-keeping Apples and Pears fetch fairly good prices. It has been stated that fruit culture ought to prove more profitable than meat culture. "In order to fatten a bullock," it is said, "we require at least the produce of 2 acres of good land for three years, after which the animal is worth from £20 to £30, while, on the same ground, we could have grown at least £100 worth of vegetables and fruit." This statement, however, fails to fairly represent the case. In the first

place, the expenses connected with 2 acres of Grass land for bullock feed would be little or nothing compared with those incurred in the production of fruit and vegetables on the same space, and the cost of marketing the two commodities would be also greatly in favour of cattle feeding. If farmers who fatten bullocks were to devote the ground on which they feed them to vegetable and fruit culture, and it came a good year or two for these crops, they would certainly have cause to repent the change which they had made. Fruit trees, too, it must be remembered, take several years to become established. If, as has been stated, £100 per acre can be gained by fruit culture, it is surprising that so little fruit is grown. I have no doubt that if ten people were to start fruit and vegetable culture on a large scale for, say, ten years, they would realise good profits, but I am persuaded that if 10,000 people started in the same kind of culture, the result would be a failure. If, in the neighbourhood of towns, the public could buy direct from the growers, we should have good results, but, where the produce has to pass through several hands, just the reverse is the case. Fruit culture, as it now is, pays fairly well; but, if it were greatly extended, prices would become so low as to be unremunerative. C. W. S.

THE FRUIT GARDEN.

HEAT FROM FERMENTING MATERIALS FOR VINE STARTING AND FORCING.

ONE can almost fancy some cultivator of the very old school exclaiming—why, what does that mean? heat is heat! What matters it how produced, or where it comes from? Stay, was the heat of flues equal to that of hotwater pipes? Well, for some purposes, perhaps better, when we had it pure and without smoke and sulphur. Just so, and I am willing to admit, to cut the matter short with our older cultivator, that I have seen as good Grapes grown by the heat of flues as by that of hot water or any other mode of heating. Smoke and gas-light flues surmounted or crowned their whole length by evaporating troughs of water-tight cement, gave out a heat at once pure and genial, soft and sweet. But then there were serious risks, for smoke has a wonderful power of escaping through the tiniest flaw in flues, whereas it often seemed as if sulphurous gases discharged their broadsides into the houses through the bricks themselves. Hot water is pure and inoffensive, neither can it subject the pipes through which it passes to such extremes as to burn or change the chemical properties of the air, and hence it may be described as the most perfect mode of heating that has yet been invented. But, nevertheless, the heat evolved during decomposition is undoubtedly better for some purposes than that obtained from any other source. It is also so cheap that it may in fact be said to cost nothing. Of course there is the labour and expense of purchasing, or, at least, collecting and carting manure and leaves, Cocoa-fibre refuse, tan, sawdust, or other substance that yield considerable heat during the process of decay. But the products, that is, the manure left as a residuum, pay the cost of labour and material, and the heat may be said to be presented free of cost to the cultivator. Decomposition is not only the cheapest source of heat but the heat so generated is of the highest quality; it is genial and feeding, as well as warming. There is no known means of genialising the air of houses so effectually as the introduction of a mass of manure and leaves on the floor and bed of the house. The whole decomposing mass raises and distributes moisture in the finely-diffused form of visible or invisible vapour. It is probable that this is one great cause of the superiority of the heat of decomposition. Many of the means of genialising the atmosphere of Vineries or other hothouses may be described as far too gross and ponderous, the latest teachings of science being to show that the leaves of plants do not absorb water. Be that as it may, it is certain they cannot absorb the huge drops

which are frequently applied to the delicate leaves of Vines through the rose of a syringe. In striking contrast to this is the gentle vapour that rises softly from the surface of a decomposing mass of leaves and manure. The constancy of the supply of vapour, too, adds to its potency and its value. Most modes of vapourising the atmosphere of hothouses are more or less fragmentary or intermittent. They are apt to be neglected just when attention is most needed. The vapour may be said to vibrate, as it were, between the extremes—dryness and saturation. By the use of hot manure or other material, the two important processes of warming and vapourising are linked together by natural laws, and the one cannot proceed without the other. Every degree of heat raises its proper modicum of moisture with it; thus the whole air of the house is genialised in the most efficient manner. Probably, too, the wide area of the evaporating surface has something to do with the greater efficiency of the mode of heating rendering the atmosphere genial. It is customary to cover a large proportion of the floor of Vineries with decomposing matter; this entire surface becomes a large evaporating pan of the most approved sort, neither too hot nor too cold, under good management. Much evil has been wrought by evaporation being overheated by fires, &c. Tender leaves may enjoy vapour but a very little steam fetters their functions or destroys their life. An excess of vapour may also arise from decomposing materials if they are used in too rank or too moist a condition; but, properly sweetened and all excess of moisture sweated out before being introduced into Vineries or other houses, the vapour and heat alike will be sweet as a Nut. Then such heat is feeding as well as soft and genial; even the vapour is more or less charged with carbonic acid gas and ammonia and other plant food, and the heat diffuses these through the atmosphere, lifting the heavier gas by its buoyant power and bringing it into direct contact with the stems and leaves of the hungry Vines, and these immediately turn them to account.

No other source of heat within reach of the cultivator thus simultaneously feeds and also warms plants. It may be fancy or it may be fact, but it almost seems as if one could see Vine leaves consume the food thus offered them; the leaves are larger, greener, grow faster, as a rule, where decomposition is employed as a source of warming. Not only this, but the Vines break more kindly and with greater regularity and stronger vigour. So generally is this admitted, that many cultivators use a bed of decomposing matter merely for this special purpose; as soon as the Vines fairly break into leaf and shoot the manure is removed. The more fact, however, that such materials furnish the plants with a full supply of gaseous food suggests the importance of using them with caution and skill. An excess of carbonic acid gas or ammonia would blight or kill, not feed, their tender foliage. Some, who have not carefully guarded against this, have mixed rank London or other manures with that already in use, and the whole "mass has gone off like a cannon," to use the expression of an experienced gardener, who lost a most promising crop of Muscats through the indiscretion of mixing part of a truck of such manure with an exhausted mass of decomposing leaves and manure in a Vinery; but, with careful preparation and use and a bi-daily turning of this mass, there is little or no danger. The heat evolved is also strong and constant. Full half the amount of coal may be saved in the early forcing of Vineries by a judicious use of decomposing matter in association with other necessary warming. This is an important point, as the cost of coal is one of the most serious drawbacks to early forcing and to the more extensive production of tropical fruits and flowers. Neither is there anything new in this utilisation of a cheap and natural source of warmth. It has been almost universally employed in the culture of Pine-apples and other tropical plants, for the entire hot-bed, used as a means of bottom-heat, also becomes, and is, one of the most potent means of warming the atmosphere also. And if so useful and powerful in Pine culture, there seems no good reason why it should not be more generally used for Vines also. And, indeed, it is very generally used. Many of our very best Grape growers look upon the genial heat arising from decomposition as the most potent factor in their success, and seldom start an early house without their bed of leaves and manure. About

two parts of the former to one of the latter keep a steady heat for a long time. A week or ten days preparation should take place in the open air, during which the mass should be turned over, upside down, and inside out three or four times, at least. A bed or ridge 4 ft. or 5 ft. in thickness will generally prove sufficient. Where such materials are not available, tan is perhaps the next best substance to use. It gives out a good heat, but its vapours are less kindly, and its gases less feeding than those already indicated. Cocoa-nut fibre refuse, sawdust, &c., are less suitable, and can hardly be called feeding. Unless, in fact, leaves, manure, or tan can be had, it will hardly be worth while to employ other substances as sources of heat in the starting or forcing of Vines; but with these at command, the cheap and most efficient source of heat derived from decomposition should be employed in all cases where there is sufficient room or proper conveniences for their use.

D. T. FISHER.

TEMPERATURE OF VINE ROOTS.

THE unsatisfactory way in which the Vines described by "W. X. Y." (p. 188) have broken, with their roots in an outside border wholly unprotected, is just what might have been looked for, especially in such a winter as this, and is another evidence of the mistakes generally committed by following extreme courses. I have received several communications from different parts of the country relating to early started Vines with their roots outside. In one case a moderate amount of fermenting material was put on the border at the starting time, and some was added subsequently to keep up the warmth, but the shoots moved so slowly and unevenly that an examination of the border was thought to be the wisest course. The small roots near the surface were found to be rotten, and the cause was attributed to the saturated condition of the soil from the great quantity of snow that had fallen there, and which, as it melted, settled through the covering material. This conclusion is most likely to be correct, as the fermenting matter, I understand, was never above 70°; consequently, there was no excess of heat to injure them. In another instance the mulching of dry leaves and dry litter was put on as heretofore, early enough and in sufficient quantity to keep in the stored-up summer's heat, but with nothing on the top to throw off the wet. In this case the shoots are strong, but have come slower than usual. In other cases, where the dry covering material was put on, and means taken to ward off the wet, the condition is described as in every way satisfactory. This all points in one direction, the necessity for taking means to keep in the accumulated summer's sun-heat by putting on the covering sufficiently early, and the equal need for keeping out the winter rains and melted snow from the soil in which the roots of early forced Vines are placed. This is not a costly operation, nor difficult where the roots have not extended beyond the limits of the border.

Twenty-one years ago I had a quantity of shutters made of 3-in. boards, 9 in. wide, cut from ordinary American Spruce deal; these were nailed four together, edge to edge, to cross pieces of the same material, and on the joints were put strips 3 in. wide by 1 in. thick. The whole received two coats of boiling gas-tar on the upper side, and they were again dressed with the tar two years afterwards. Nothing has been done to them since; they have been exposed to the weather all the time, and I have now a number of them forming the roof of a shed, and they look as if they would last a good many years longer. They were made by the garden men, were cheap, and evidently have been durable. After the dry material was put on the borders, these shutters were laid on the top, with their bottoms resting on an ordinary spout made of boards like them, and which carried off the water that otherwise would have settled in the border, just at the point where the greatest quantity of feeding fibres were located.

When the roots of Vines have to any considerable amount got outside the prepared border, it is obvious that little can be done for them either in the way of protection, keeping in the earth heat, or supplying more to it; and few who have had much to do with Vines, are unaware that by far the greater quantity of such as have been established for any length of time, and that are not subjected to root-lifting, and thus their roots to a great extent kept within the prescribed space, have often very few feeding fibres, except such as are far out into the ground beyond. Nothing is more common than to hear roots spoken of which are supposed to be in the border, when, on examination, all that have direct influence in sustaining the heads of the Vines, are found to be quite outside the situation allotted to them; and in this way are as incapable of being influenced by the well-meant but useless attentions given to the prepared borders, as if they belonged to another set of plants.

T. BAINES.

PLATE CLXX.

A GROUP OF DAFFODILS.

Drawn by Mrs. ROBERT MILES.

Up the mountains the Greeks buried their dead, and there they lay o'ershadowed by a canopy of Asphodels, whose flowers twinkled on their branches like evening stars—a fit type, the Asphodel, of the Resurrection, with its dead blooms, and blossoms, and buds, as of days that were, and days that are, and days that are to come. And so these dreamers came to think that when a new life was come to the sleepers they would wake in Elysian fields, in meadows one mass of ever-blooming Asphodels. And whoever is responsible for our English name "Daffodil" thought that these saffron flowers were the Asphodels of the Greeks, and so called them "Fleur d'Asphodel," from which we get the corrupted name Daffodil. Let us keep to this beautiful derivation beyond all others, and learn humbly from it that our own churchyards might be as full of Daffodils as the Elysian fields were of Asphodels. We ought to plant the commoner kinds in such numbers that the village children might pick and pick, and yet could not pick them every one. Of those kinds to be planted by the thousand are the common Lent Lily (*Narcissus pseudo-Narcissus*) and its giant variety (*N. maximus*), with the large two-coloured Daffodil (*N. bicolor*), and the small form (*N. minor*), which is one of the first flowers of spring. The Poet's Daffodil (*N. poeticus*) and its double form can be obtained by the thousand from orchards near London for a mere trifle, and the Peerless and Scented Daffodils (*N. incomparabilis* and *N. odorus*) will soon be very common. Of the Daffodils in the accompanying plate, the nearest on the left is the large form of the two-coloured Daffodil, known as *Bicolor Horsfieldi*; it is hardly represented as large as life. The Empress is a larger form still of *N. bicolor*, and the Emperor is the largest of all Daffodils. Next to *Horsfieldi*, at the top, come two portraits of a pale form of the Peerless Daffodil (*N. incomparabilis*); on the left, half-way down the page, is the Poet's Daffodil (*N. poeticus*), whose double form is as lovely as a *Gardenia*. Immediately next to that comes the rare *Cyclamen*-flowered Daffodil (*N. triandrus*), some forms of which have white crowns. That pale, self-coloured one in the middle is *N. cerneus*, a fine companion for *Anemone fulgens*. Lower still comes the rare white Hoop Petticoat (*N. Bulbocodium monophyllum*), which is certainly not easy to grow. I don't think this has been properly represented before. Observe the deep lobing on the fringe of the petticoat—a flower opening here, of the purest white, full of light, like frost on a window pane. If one person, by this picture and these notes, has been seized with a fancy for Daffodils, our labour will not have been in vain.

FRANK MILES.

Bingham.

Daffodil Culture.

There are but few species or varieties belonging to this family that are not perfectly hardy, or that will not succeed under ordinary circumstances in the open border. A few kinds, principally from Algiers, Spain, and the islands in the Mediterranean, consisting of *N. pachybulbos*, *viridiflorus*, *calathinus*, *Broussonetti*, and the various forms of *Corbularia*, and some others, flower mostly during the autumn and winter, and consequently are not adapted for out-door cultivation, except in very favourable situations. I have made several attempts to grow some of these out-of-doors, but have always failed. I have flowered them, it is true, but their blossoms and foliage get so much injured by the weather that the bulbs become emaciated, and in the second or third season disappear. Fortunately there are, as I have said, but few of this character; the great bulk are not only perfectly hardy, but will grow in almost any soil or situation, and increase in numbers rapidly. By means of hybridisation, too, it is possible to obtain varieties much superior to any yet in cultivation, and the process is so simple that any one may practise it with a fair chance of success. Most of the *Narcissi* prefer a good, rich, friable loam, annually enriched by a top dressing of manure. I believe in heavily manuring for all bulbs, Lilies especially, but care must be

used to keep the manure away from the bulbs while in a fresh state. For the small early flowering kinds, such as *N. rupicola*, *N. Bulbocodium intermedius*, and others of like character, I would recommend a sandy loam, and the bulbs to be planted in rather drier positions than the vigorous forms of *bicolor*, *Telamonius lobularis*, &c. All this family require replanting every three or four years, some even in two, but this depends a great deal upon the condition under which the bulbs are placed. The best criterion as to when they require replanting, is the production of small, weak foliage and a scanty proportion of flowers. When that occurs, one may make sure that

White Hoop-petticoat *Narcissus* (*N. Bulbocodium monophyllum*).

the bulbs have exhausted the soil, and that they have not sufficient room and strength to fully develop themselves.

Hale Farm Nursery, Tottenham.

A. PERRY.

***Myosotis dissitiflora* Injured by the Severity of the Winter.**—This usually beautiful spring garden plant is now in a deplorable condition. I have never seen it so much injured, and fear that it will make but a poor display, although it now shows evidence of breaking up afresh from the roots.—A. D.





ROSES.

PROTECTING AND FORCING.

PROTECTION FROM FROST.—Let us now proceed to describe the various ways in which Rose trees are protected from frost. The Brier in its natural state is not hurt by frost, but the grafted varieties are more or less tender. Rose trees, however, like other plants, are differently affected by frost, according to the circumstances in which they are placed. For instance, a shrub which would bear cold amounting to 15° or 20° below the freezing point, provided the thermometer fell gradually and in dry weather, would perish if such a degree of cold were to set in suddenly before the sap had begun to flow, or after its shoots had been swollen by rain or a thaw. Again, if the same Rose tree were planted in light, sandy, dry soil it would not be injured by cold some 20° below the freezing point, while in a strong, clayey soil, capable of retaining a good deal of moisture, it would perish at a much higher temperature. In order, therefore to be prepared for danger, we must inquire into the different kinds of Roses which we are cultivating, the nature of the soil, the aspect of the beds, and the general state of the climate of the locality.

SHELTERS FOR DWARF ROSES BUDDED AND ON THEIR OWN ROOTS.—Dwarf Roses are generally planted in beds or in borders. During the first fortnight in October we earth up each bush as far as the first branches. The earth used for this purpose should be fresh, and rather light than heavy. The watery shoots which project beyond the prescribed limits are cut back. The interstices between the branches are then filled in with leaves, so as to form a heap round each Rose of from 14 in. to 16 in. thick. This mound of leaves and soil is kept in its place by covering it over with branches of some green shrub, such as Broom. If necessary, a layer of straw, forming a kind of slanting roof, may be constructed over the leaves so as to throw off the wet.

SHELTERS FOR STANDARD AND HALF STANDARD ROSE TREES.—When the stem of the Rose tree is sufficiently flexible to allow us to bend down the head to the ground, we bring it half under and half above the level of the soil, covering it over with a heap of leaves as above described. The stem is surrounded with a packing of dry Moss or Hay, kept in its place by a straw covering, and, finally, the base of the tree is earthed up and surrounded with a mass of dry leaves. The whole is kept firm by means of a training stick, which is inserted in the ground at the highest part of the curve made by the bent stem, the two being firmly tied together in the usual way. When the stems cannot be bent without danger of breaking them, we must begin by cutting the principal branches of them even with each other. Their ends are now brought together and tied, and the empty spaces between them filled up with dry Moss, the whole being kept in its proper position by a second tying. The head is now surrounded with Moss, and the lower part of the stem is earthed up and covered with Rye straw, beginning from the bottom. The ears of the straw, if it has any, should be upwards, and the lower part should spread like a thatch over the surface of the leaves forming the mound. The upper portions, in the same way, should spread out and project beyond the head of the tree, and be brought together above the head, and firmly tied together in the form of a double cone. The apex of the cone should be covered with a flower pot, the hole of which has been closed by a cork, the whole being firmly attached to a wooden support driven into the ground. It must be understood that if a single length of straw is not sufficient, we must use two layers instead of one, taking care to begin at the bottom. As soon as all danger of frost is over the coverings are taken off; but it is as well not to be in too great a hurry over this operation, because, on account of the trees having been kept so well covered, they will have put forth numerous delicate shoots, which are not accustomed either to the least cold or to the hot rays of the sun, so that in any case we should take away the coverings when the sun is not shining. All the precautions which we have described above are not sufficient to guard against the effects of frost on dormant shield-buds which have been grafted at the latter end

of the season; we must, therefore, protect them further by surrounding them with a dry Maize leaf, with oiled paper, or with grafting wax.

ROSE FORCING.—The varieties preferred for forcing are Rosier du Roi, La Reine, Jules Margottin, Madame Boll, Souvenir de la Reine d'Angleterre, Louise Peyronny, Blanche Laiffite, Bengal Cramoise Supérieur, Tea-scented Roses, such as Souvenir de Malmaison, Madame Falcot, Mârchal Niel, Safrano, Madame Lacharme, Mrs. Bosanquet and Lamarque. These varieties are grafted on low stocks at about 4 in. from the ground, and form dwarf Rose trees fit for pot culture. Before potting, the roots must be trimmed and the suckers cut off; they are then planted in 6-in pots in a mixture of equal parts of fresh mould and well rotted night soil, which has been passed through a fine sieve. The potting generally takes place in November, and the potted Roses are buried in the borders of the garden, placing the pots on their sides, and protecting them from the cold with an abundant layer of litter. In the month of April these Roses are planted out in borders, so that each border may contain five rows. They are then pruned, the strongest branches being chosen and cut down to within 8 in. of their base, all weak shoots, producing nothing but leaves, being got rid of. The surface of the bed is now covered with a layer of manure, which will do much to keep the roots of the Rose trees moist. The trees, however, must be copiously watered during summer. In the November following these operations they are taken into the forcing house. The tips only of the branches must be pinched off, for in this case quantity is of more importance than quality. The pots are placed either in the frames of the forcing house, or on a layer of stable manure about 8 in. thick, made up on the surface of the tan in the frames without plunging the pots, which must be kept at a certain distance from each other, otherwise the plants are apt to become weak and "leggy." To keep the soil in the pots constantly moist, their surface is covered with a good layer of stable litter, and watering is kept up during the whole time of forcing. One very essential point is to keep in the forcing-house several barrels filled with water, which must be always kept at the same temperature as the house itself; that is to say, at from 60° to 65° . According as we want to force the growth of our Roses, and obtain a supply of blooms for a certain predetermined date, we must allow a period of forty or fifty days for the plants to flower fully. If we notice any aphides on the tops of the shoots, we must lose no time in giving the plants several copious fumigations with tobacco during the night, until these troublesome pests be eradicated. If these Rose trees are grown for commercial purposes, they are sent to market as they come to perfection, and are replaced by others. This kind of succession of forced Roses lasts until the month of April, the remaining subjects being planted out in the open air, after having been unpotted. M. Laurent, of the Rue de Louvre, at Paris, is at the head of the forced flower trade. With him winter does not exist, and from November to May he supplies the market with a constant succession of Roses and Lilacs, these flowers being sought after more than any others, for bouquets and head-dresses for dinners and balls.

The method of forcing Roses for cut blooms, differs from that adopted when the trees are sent to market in pots. The trees are planted in the soil of the frames of the forcing-house itself. Thanks to the perfection to which the art of heating by hot water has been brought, we can regulate the temperature at will, at the same time leaving the glasses of the frames quite uncovered, so that the colour of the blooms is in no way interfered with. Failure takes place in only such severe winters as that of 1871-2. Rose trees forced in this way have the woody portions of their branches only half matured. As soon as May arrives, the lights of the forcing house and the frames must be opened, in order to give them the full benefit of the summer. It is just at this period that the Rose trees should undergo a fresh pruning, which consists in cutting out all weak shoots, which only tend to entanglement, and shortening the bloom-bearing branches to a length of about six inches. Watering must of course be kept up, and the ground weeded and hoed as often as may be necessary. There is but little trade done in Rose-buds during the summer and autumn, ex-

cept at the feast of St. Mary, September 8th, when they will fetch as much as four francs a dozen, every lady bearing the name of "Mary" being presented with rose-buds by all her friends on that day.

FORCING ROSES IN FRAMES.—It is not at all necessary to have a forcing-house in order to force Roses. The following is the method adopted by the Paris florists, in order to procure a supply of Roses early in the spring. Rose trees are potted a year previously, and kept in the borders of the garden. Towards the beginning of November the pots are taken out of the beds, and laid by the heels with the plants in a slanting direction, so as to avoid the growth of the wood and hasten the fall of the leaves. About the middle of December, or a little later or a little earlier, according to the weather, the pots are placed in their proper position. For this purpose a bed is dug, and the necessary number of frames placed upon it. In each frame we plunge eight pots, reserving a space about 10 in. broad along the sides of the frames, and the whole is covered in with the lights. Frames for Roses ought to be 2 ft. 2 in. high in front, and 2 ft. 8 in. at the back. The Rose trees, which should be kept fairly watered, remain in the frames until the eyes are swollen. The shoots above the eyes are cut down, and all useless shoots are got rid of. The pruning over, the frames are surrounded with a wall of stable manure, running all round the frame and overtopping it by about 6 in. or 7 in. The wall of the manure should be 2 ft. wide at the base, and 1 ft. 4 in. wide at the top; in about ten days the manure will be in full fermentation. We must now thoroughly uncover the frames in order to get rid of the ammoniacal fumes, which are fatal to Rose trees, as well as of the damp, which would cause the plants to wither if fresh air did not dry the leaves and buds thoroughly. The frames must therefore be propped open every day when the weather permits, and covered with straw mats at night. It must be understood that the mats are never taken off except the sun be shining. The growth of the plants must be looked after, insects must be rigorously destroyed and the green fly put to flight with copious fumigations of tobacco, given in the evening. The protecting walls of manure should be turned once every fortnight. Rose trees treated in this way, generally bloom about forty days after they are placed in the frame. Counting forty days as the period necessary to bring a Rose tree to perfection, we can so adapt our supply of pots to the frames, that we can have a succession of blooms from the beginning of February to the middle of May, when the first Roses grown in the open air begin to make their appearance. J. LACHAUME.

THE KITCHEN GARDEN.

NOTES ON SEED SOWING.

Sow only seeds of good quality, both as regards germinating power and pure stocks. When a failure occurs badly-prepared land or careless sowing is often the main cause. A favourable seed time can generally be had by watching and waiting, and promptly taking advantage of it when it arrives; it is better to wait a few days than to sow when the ground is in an unfit condition to receive the seed. But with land difficult to work in a backward season a crop may often be successfully got in with the aid of a few light boards laid across the bed; this, in some cases, may perhaps involve a little more labour, but it insures success. The same means may be usefully employed in transplanting in wet seasons, as nothing makes land that is naturally adhesive so unfit for plants as treading on it when its surface is wet. All seeds are best sown in drills, at varying distances, according to each particular kind, but, in all cases, room should be allowed to use the hoe freely. Both thick and very thin sowing are, in certain cases, evils to be avoided, but the character of the land should be considered in deciding what quantity of seed to sow. On light, warm land, where every seed will grow, fewer seeds should be sown than on damp, heavy land, and where, perhaps, in a cold, unfavourable season, slugs and other insect enemies may be troublesome. Besides, no matter how good the seeds may be, some will produce better and stronger plants than others, and there should

always be sufficient plants on the ground to allow of a choice being made, so that the crop, when finally thinned, may consist of selected plants only. Those who have had much to do with young plants will understand the importance of this, although, it may be, the work of thinning is often delegated to workmen who ignore or overlook its force.

The depth at which seeds should be buried should bear some proportion to the size of the seed; but the character of the soil in which they are laid is even of more importance. In warm, dry soils seeds may be safely and advantageously placed deeper than where the soil is of a heavier nature. Drills for what are termed small seeds need not in any case be more than $\frac{1}{2}$ in. deep, and less will suffice on heavy soils. In the latter case, unless the soil be in a mellow condition, cover with a prepared compost, of which burnt earth, or decayed vegetable matter from the waste heap, forms the chief part. When this plan is adopted, no matter what the soil or the season, the seeds will germinate regularly and well. Larger seeds, such as Peas and Beans, may be covered 2 in. for early crops, while later sowings may be put in a little deeper. The same remark applies to later sowings of small seeds, such as those of Turnips, as it often happens in dry weather, by burying them just a little deeper, the seeds can be laid in moist soil, and will, in consequence, germinate more speedily, and when seeds lie long in the land the crop cannot be so even or regular. In certain cases the germination of seeds may be hastened by mixing them with some damp substance, such as sand, or by soaking them in water for twenty-four hours or so before sowing, but the most natural way is usually the best, and artificial plans should only be adopted where, from some unavoidable cause, the sowing of the crop has been delayed.

All seeds should be sown on moderately firm land; for some plants, such as Onions, this is indispensable, and it is especially necessary if the land be of such a nature as to not readily consolidate or settle down, and there is a vast difference in different gardens in this respect. Treading is the means commonly adopted to secure solidity, but where land is very light, the iron roller may be drawn over it twice in contrary directions. If the surface be not sufficiently dry to bear the roller at the time of sowing, or even the feet, delay sowing till the surface is in a suitable condition. This need not, however, interfere with the sowing of the seeds, as the final treading or rolling may be given a week or ten days after the seeds have been sown, and it will be better to do it then than not at all.

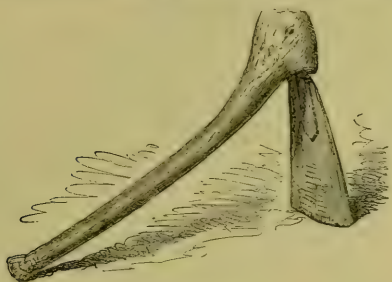
There is nothing better than lime dustings to preserve young plants from the attacks of slugs, and very early in the morning or late in the evening, is the best time to apply them. Stirring the surface among the young crops the moment they appear, freely and often, will also help to keep the slugs in check, as they cannot travel well over a rough, uneven surface, and the stirring will also encourage and stimulate the young plants to grow up out of their reach. Scattering dry ashes over any crop to which slugs are partial, is likewise a good preventive, as their soft, slimy bodies can't get over the sharp, jagged edges of the small particles of cinder with which sifted ashes abound.

Where mice or birds are numerous and troublesome, the seeds should be thinly coated with red lead just previous to sowing, in order to make them distasteful. This is easily done; first, damp the quantity of seeds to be sown with water or oil; then scatter a little dry lead over them, and stir and mix altogether. It must not be forgotten by persons unaccustomed to the use of such substances that red lead is poisonous. Paraffin oil may also be used for soaking seeds in to preserve them from vermin, but as commonly sold in the shops it varies greatly in strength, and should be used first experimentally till its effect has been ascertained. E. HODDAY.

SPADE HOES.

A HEAVY iron hoe appears to be the universal implement employed for land culture by all half-civilised races, and perhaps under all circumstances no other would be so generally useful. In the Economic Museum at the Crystal Palace, Sydenham, there are one or two examples of "fasses" or spade hoes used in Egypt,

and Livingstone, in his volume of "Missionary Travels" (London: John Murray, 1857) illustrates two similar forms which he saw used by the African natives of Batoka and Angola. Both consist, as will be seen, of a heavy iron blade set in a stout wooden shaft. The Angolan form is peculiar, however, in having two shafts which diverge from the blade at an angle of about 22°, and on being struck into the soil the two plough-like handles give the operator a greater leverage power than one would naturally do. The other implement illustrated may be taken as the type of that adopted by the Chinese emigrants in the Straits Settlements and Eastern Archipelago generally; indeed, wherever a Chinaman sets his foot in a new locality for



Batoka Spade Hoe.

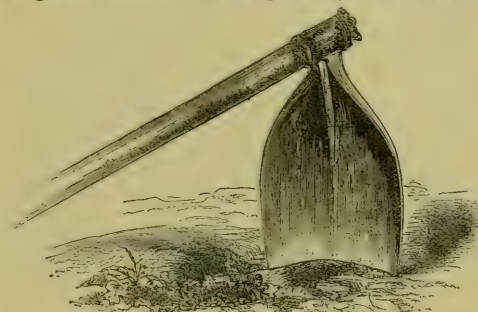
cultural purposes, a chopper and a blade or two of his national "chunkal" or spade-hoe are sure to form a part of his extremely small belongings. He sets to work by cutting the brush wood and small timber on his future clearing, and piling this at the base of the large trees; he fires the whole until only a few great black stumps, and here and there a gaunt, leafless Durian or Dryobalanops remains of the old forest. Now, the "chunkal" is used to stir the virgin soil by chopping it up, a much quicker process than digging; indeed, a spade would have no chance in a competition where, as in this case, the soil is full of roots. If desirable, the soil can be thus chopped up to a depth of 12 in. or 14 in., the only drawback being that the operator stands on the freshly cultivated land. Armed with a chopper and one of these spade-hoes, a solitary Chinaman will not unfrequently build a miserable little Palm-leaf hut on a well watered bit of forest near a river, and in a month



Angolan Spade Hoe.

or two he will have cleared several acres, to which, when planted with Gambier or Pepper, he looks for a fair return. Here, alone in the tiger-infested forest, or at the best with a companion or two equally poor as himself, he subsists on a little boiled Rice, until his crops of Sweet Potatoes, Bananas, Sugar cane, Egg fruit, Maize, and Yams are fit for use; for one of his first cares has been to clear the bit of land around his hut, on which to plant the few roots and seeds which he has brought with him, most probably the gift of one of his richer countrymen, perchance of the trader of whom he bought the bag of rice, which with a little freshly caught fish from the river, are the only "stores" which stand between him and

starvation, until his garden produce is available. I have often come across these clearings right in the heart of the forest, miles away from any other human habitation, and have been as much astonished at the amount of labour performed with such a simple tool, as the thrifty labourer himself was to see me. Practically, I found one of these heavy sharp-edged hoes invaluable for taking up shrubs and plants in the forest—a much more difficult operation than one would imagine—since the earth an inch or two below the surface is often thickly interlaced with strong roots. In English gardens such an implement—which any blacksmith could soon make—would be of great practical use in clearing shrubberies and plantations, as well as for earthing up operations of all kinds. It must be well steeled along the cutting edge, and should be made strong and heavy enough to sever roots as thick as the wrist at a blow. It will then be found a really useful and practicable implement; a combination of the awkward old grub-axe with the hoe and spade, and invaluable for cultivating land near hedges and trees where roots are plentiful, and where the use



"Chunkal" or Chinese Spade Hoe.

of the common spade, to say the least, is extremely inconvenient.

I. O. U.

ADVANTAGES OF PLANTING POTATOES EARLY.

LAST year was an exceptionally bad year for Potatoes, and it is not surprising to find growers condemning good kinds, such as Climax, which may be new to them. I never had a more striking example of the importance of early planting on the size and quality of the crop than last year. In the first place I will speak of a good breadth of Lapstones. This, with me, is usually the best of all Potatoes, and I have grown it more than twenty seasons. Early last year I trenched a piece of ground three spits deep, throwing it up into ridges 2½ ft. wide. I manured it with the contents of a rubbish heap, consisting chiefly of rotten leaves and lawn sweepings. In fine, dry weather, about the middle of March, drills were drawn between the ridges. The sets were carefully planted, and the ridges were forked over, making the ground level. About a fortnight afterwards the remaining portion was trenched, treated, and planted in the same way. Those planted first were up a few days before the rest, but in a short time no difference could be seen, and when in flower no trace of any rows existed, as far as general appearance went, but the disease set in earlier than usual, and with unwonted severity, and on the whole, in a fortnight, not a green leaf was left. When dug, in the middle of August, those first planted were twice as large as the tubers of the second lot, but the quality in both cases was close and bad.

With reference to other sorts grown under plough culture, let us advert to an adjoining field. This, consisting of two acres, was twice ploughed, dragged, harrowed and rolled, and got to a fine tilth, and the Potatoes (two sorts, Fortyfolds and Regents) were ploughed in from 6 in. to 7 in. deep, and 3 ft. from row to row, the plough turning a 13 in. furrow each time. The planting of the field was finished in two days (the 18th and 19th of March); the weather being fine the crops were

put in under the best of circumstances. A little Guano was sown in the furrow with the seed, and nothing more was done until the young plants began to show themselves above the surface, when the ground was lightly harrowed in order to kill all small weeds. As the Potatoes grew they were twice horse-hoed, the second hoeing covering Hussey's Grey Stone Turnip seed, sown by hand from a tin powder canister with a small hole in it. Nothing more was done until the tubers were dug in the middle of August, when the Fortyfolds (having succumbed to the disease soon after the Lapstones) turned out to be a small sample but of good quality; the Regents, the haulm of which was only partially affected, proved to be a fine crop and excellent in quality, whereas Regents, grown by cottagers to whom I gave some seed, planted a month later, proved small and close, although well cultivated; a decided proof, according to my opinion, of the advantage of early planting. When dug the crop is taken to cool dark sheds and picked over. About two or three weeks afterwards, the seed and eating sorts were stowed away in their respective places, and they have not been picked over since, as this season, owing to the cold weather, they have not begun to grow yet.

On the headland of the field on the south side, after the Potatoes are planted, I sow Savoy, Drumhead Cabbage, and Thousand-headed Kale. These, when transplanted, make up for any deficiency that may occur in the Turnip crop sown amongst the Potatoes. Some of the Turnips measured 22 in. in circumference. The culture of this field for both crops is even less than that which an adjoining field receives for a Turnip crop alone under a good tenant farmer, and we get our crop of Potatoes with no more labour than that of dropping in the seed and digging the crop. For many years I have tried most of the new sorts sent out, and some years ago I exhibited over fifty kinds at South Kensington, but now for stock I rely on the above three old sorts. The field referred to is now well dressed with rotten leaves, and it will be ploughed up deeply as soon as fine weather sets in. The soil here being naturally well drained, I plant deeply and never earth up a Potato. Barthing up buries the first leaves, and thereby makes the Potatoes ten days or a fortnight later than they otherwise would be, which is of some importance when the disease shortens the season by setting in so early as it did last year. I ought to add that in my Potato culture not a single cartload of ordinary manure was used in either year during which I have grown Potatoes in the above manner. JOHN GARLAND.

Killerton, Exeter.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Winter Lettices.—During this long winter I have daily cut good Lettices of the Black-seeded Bath Cos variety, grown out of doors. The seed of it was sown in the first week in July, its produce was planted in good land, and when full grown covered over with 6 in. of light Braeken. This not only prevents the frost from injuring the Lettices but blanches their hearts. On St. Valentine's day I lifted several barrow-loads, and laid them in for use, the ground being wanted for spring cropping.—R. GILBERT, *Bughley*.

Magnum Bonum Potato.—It is most probable that the soil in which "B. H. J. S." (p. 190) has grown his Magnum Bonum Potato is far too rich. This variety, to be good for table, should be grown in soil that is comparatively poor and moderately dry. If Magnum Bonum comes unfit to eat in such soil, there are fifty other sorts considered good that would, if grown in the same soil, be in the same condition. The anxiety to secure a large crop induces planting to be done in a rich, fertile soil. This may suit the more delicate or less robust early or garden kinds, but in the case of large-growing sorts it is a mistake. Except where this is the case, I have not only heard no complaints of the quality of Magnum Bonum, but have heard it generally highly spoken of. I raised a splendid crop of moderate-sized tubers of this kind from land that had not been manured for three years.—A. D.

Potatoes and Frost.—I trust no one will be disposed to take "Cambrian's" remarks as to the slight effects of frost upon Potatoes literally, and next winter be careless in protecting their stores. The more completely the frost is excluded the better, as not only does a slight attack affect the eating quality of the tubers, but it too often kills the bud germs, and thus induces blindness in the seed tubers. I observe that both "Cambrian" and Mr. Baines falls into the error of quoting Myatt's, Veitch's, Lee's, Rivers', and Gloucestershire

Ashleaf Kidneys as distinct kinds. Nothing can be more delusive. The exhaustive trial of Potatoes undertaken at Chiswick a few years ago, and which fully settled the question of distinctness or otherwise in relation to numerous kinds, showed that all these so-called sorts are one and the same. Where, again, is the difference between Dal-mahoy and York Regent, except in the imagination? As to recommending the Regent, I would strongly recommend its not being planted. A sort that it is almost certain will show a crop more than half diseased is worse than useless.—A. D.

GARDENING FOR THE WEEK.

Conservatory.

Camellias in pots as they go out of bloom in conservatories should be removed into the houses in which their growth is to be made, and their places should be supplied by plants that flower later, so as to keep up a succession. Even in places where considerable numbers of Camellias are cultivated, it often happens that none of the varieties that possess a natural disposition to bloom late are grown, which is not only a mistake, so far as regards the flowers for cut purposes, but also from a decorative point of view, as, when the Camellia bloom is over, especially in large conservatories, it is a difficult matter to find flowering plants of size sufficient to take their place for general effect. Azaleas, if brought into flower as recommended, will now be very useful for these structures, and so will also Genistas, Acacias, Epac-rises, Habrothamnus (grown as standards), Lilacs, Deutzias, Prunuses, Guelder Roses, Rhododendrons, Ghent Azaleas, and similar forced shrubs. By the assistance of these, combined with smaller growing plants, such as Cinerarias, Cyclamens, early-flowering Pelargoniums, and the late batch of Primulas, Hyacinths, Tulips, Lily of the Valley, and Narcissi, a display may now be forthcoming, which it is not easy to equal, either for quantity or diversity, at any other time of the year.

Insects.—Through the little extra warmth required in conservatories, coupled with the fact that many of the plants have been brought on into bloom in a higher temperature, aphides are certain to make their appearance on some, and if continual watchfulness be not maintained, so as to destroy them, they soon spread to an extent that entails very much more labour later in the season. At no time is it so necessary to take means for keeping these pests in check as conservatory are necessarily moved backwards and forwards to other at the present, when the various subjects that have to do duty in a houses. If these insects be not killed on their first appearance, the occupants of almost every house in the establishment get infested with them. There are several objections to fumigating conservatories, especially when attached to the dwelling, where the odour from Tobacco, or of the various preparations now made from it for using in like manner, is highly disagreeable for some days after. To avoid this, any plants found to be affected should be taken out and fumigated elsewhere. For this purpose I have found it well to employ a small, tent-like contrivance, consisting of a light, wooden framework that could be set up in a potting shed, or any outbuilding sufficient to hold a considerable number of plants, by covering the whole up closely with any available material, such as canvas, Peach blinds, or mats, and if a good oil sheet happens to be at hand, putting it over all, the fumes can be kept in until the insects are killed. If two or three applications be given to effect their destruction, without its at any time being so strong as to injure the plants, it will be much better and more economical than fumigating the conservatory, or even a large house, when only a limited number of plants require to be treated in this way.

Shading.—The sun now begins to be powerful, and there is a disposition, in flowers as the season advances, not to last so long. This particularly becomes apparent if no shading is employed; but fixed shading is at all times injurious in its consequences, and should never be used if it can be done without, where there is a desire to grow the plants well. At no season are its effects worse than in the early spring, when the young, tender shoots and leaves require all the light they can possibly get, and where, although there may be a necessity for shielding the flowers from the direct rays of the sun for a few hours in the day, during the very much longer period when nothing is needed, the shade does much mischief. On conservatories with plain roofs there is no difficulty in the matter, by merely using blinds with the ordinary rollers; but on those that are more elaborate in their construction they are generally unworkable, necessitating resort being had to fixed material, but this, when so employed, should always be very thin and light-coloured. The coloured shading of every kind is an unmitigated evil, for the simple reason that it darkens the plants proportionately as it is removed in colour from white.

Greenhouse.

Potting Hard-wooded Plants.—Plants of this description are now potted much earlier in the season than at one time was considered the best; then the operation was deferred till towards the end of April or May, when more active growth had commenced, but this naturally had the effect of subjecting them to greater danger of death or injury by the disturbance of their roots when the drying influences of sun and air were more powerful in their action on the wood and leaves, and, in addition, the state of the weather necessitated the admission of more air to keep down the temperature in place of the confined, close state of the atmosphere it is essential to provide for a few weeks after potting, and which can be managed so much better whilst the weather is comparatively cool. Sufficient soil should at once be prepared, both peat and loam, proportionate to the number of plants that require one or other, in all cases breaking it by hand instead of sifting, except for plants that have only just advanced beyond the cutting stage, and I may here urge that, despite what may appear to be extravagant practice in rejecting much more of the solid earthy portion of the soil, and confining the use comparatively more to the fibrous matter, this will in the end prove the truest economy, as not only will the plants grow away in such material a deal faster than in the soil, compacter soil, but those of an enduring character and expected to keep on for a number of years will be far less liable to get out of condition and die prematurely. At the same time it may be necessary to point out that when soil of the description advised is used it requires more care in compressing it closely in the pots. All the pots requisite should be in readiness—new ones so far as wanted, and old ones cleansed—with crocks broken to the sizes needed, and also washed clean if they have been before used for a like purpose, with the necessary labels to replace all that have become illegible, so that the work can go on and be completed in a systematic kind of way.

Where there is a very large number of hard-wooded plants, it is usual to commence with the smallest first; there is one disadvantage attending this, that it necessitates a considerably larger quantity of pots on hand—stock always liable to breakage—whereas, if the large specimens are potted first, gradually coming down to the smaller, the pots that are thus set at liberty can be used for the latter, but this, of course, must be subject to the condition and immediate want of shifting of the different plants to be operated upon. On those whose experiences have been more confined to plants of a soft-wooded, quick-growing character, it may be necessary to impress that, to prevent, as far as possible, the injury liable to be inflicted on hard-wooded subjects in removal, through the breakage of their roots, which are so much longer in repairing any harm they sustain than are plants of a more rapid-growing, hardy description, it is requisite to take every precaution not to disturb them more than is unavoidable. The system once thought needful of loosening the roots from the old ball is most disastrous in its consequences; incalculable numbers of tender-rooted, hard-wooded plants have been destroyed by it. Even when absolute death does not ensue, it frequently takes months before there are a sufficient quantity of healthy feeding fibres to supply the place of those mutilated. It is also of importance with this class of plants to see that the soil which the roots are already in is well moistened before potting, so as to allow all the time possible to elapse before the water is given after they have been placed in new material, for the reason that when due care has been taken to avoid any injury to them, a good number will be broken in the necessary removal of the old drainage from the bottom of the ball, and if water has to be given before these have had time to heal up, the wet condition of the new soil, laying in absolute contact with them at the bottom of the pots, often causes them to rot back so far as to destroy the plants. This, unquestionably, is the direct cause of death after potting, although it may often not take place for many weeks, or even some months later. After potting, it is essential that the plants should be kept for three or four weeks closer than usual, admitting little if any side air, and keeping the atmosphere moist.

If the plants are standing on shelves or stages the ground underneath should be moistened, the evaporation from which will be sufficient for the purpose, as hard-wooded plants generally are better not syringed, except with a view to remove insects, or for a time after being cut back. If the weather comes very bright, it will cause the temperature to rise considerably, but as this, so early in the season, will rarely be more than for a few hours in the middle of the day, it will do no harm if the roof ventilators be open. Even in the case of plants that are not to be potted, and that usually receive a maximum of air, such as Heaths, it must be given very sparingly at the sides or not at all during this and the next month, when the wind happens to be of the dry cutting character proverbial at this season, for, if admitted in a current upon even the old foliage, it is often very destructive in its effects. In span-roofed houses where means

exist, as they ought to do, of giving air at both sides, a little can always be admitted at that opposite to the direction from which the wind happens to come.

Tender Annuals for Pot Culture.—If a little seed be now sown of Balsams, Globe Amaranths, *Colosia pyramidalis*, and Cockscombs they will come in early for conservatory and greenhouse decoration. It is not well to sow the seeds in more heat than is necessary for their healthy germination, and in raising the young plants at this season, it is essential that, from the first of their appearance, they be placed as near the glass as possible, for, if they become in any way drawn up weak and spindly, no after attention can ever repair the injury; for a like reason they should always be potted singly as soon as they are large enough to handle.

Striking Zonal Pelargoniums.—These plants, as is well known, will strike at any time of the year, but the varieties intended for winter flowering I have always found to do much the best from cuttings struck the autumn previous or early in spring, times which give them a chance for getting the wood hard and solidified; without this condition, when subjected to the warmth requisite for the free development of flower through the dull season, they almost invariably are inclined to run to leaf rather than the formation of bloom. Cuttings taken off now, struck in warmth, grown on without check, and thoroughly hardened up during the latter end of summer, if properly managed afterwards, will well answer the purpose required.

Fancy Pelargoniums.—The disposition to cultivate plants that are more easily grown, has caused these to fall into comparative neglect. The present is much the best season to strike them, securing for the purpose the freest-growing shoots. They will root now much more certainly and quickly, and grow better afterwards than those put in when the old plants are cut back after flowering.

Fuchsias for the general display should now be encouraged to make all the growth possible, as, if they do not attain sufficient size early in the season, their natural free-flowering disposition brings them into a blooming state, rather than to shoot extension, when the weather gets hotter. Stop the shoots as requisite, to fully furnish the plants. Syringe them freely on the afternoons of fine days to keep down insects.—T. BAINES.

Flower Garden.

Auriculas.—A pleasant change has come over our specimen plants. A few weeks ago they were almost dormant, now the young leaves are expanded, and trusses are emerging from the centre of the crowns, showing by the development of the pips that the leaf covering is very favourable to their growth, as most of them are as far advanced as the side trusses that could be seen in November. See that the greatest care is taken to protect the young growths from cutting winds; also that the frames are covered with mats at night. We have a number of pots full of seedlings, as it was perceived that the seeds were vegetating as the frost set in about Christmas, the pots were taken out of the frames and placed in a greenhouse. The young plants have mostly formed a third leaf, and they must now be pricked off, say about twenty-five plants in a 4-in. pot. The pots are filled up with fibrous loam, leaf-mould, and a little rotten manure, merely using about $\frac{1}{2}$ in. of finely-sifted soil on the surface in which to plant the young seedlings; after potting, place the pots in a cold frame.

Carnations and Picotees.—We have now finished potting these, and have, as far as possible placed the plants under the shelter of glass lights; the object in doing this is to shelter them from high winds and heavy rains. Those who have not the convenience of lights had better improvise some sort of shelter. Mr. Dowdell's garden at Clapham is exposed to the wind in all directions, and he has erected a framework which he has covered with hexagon garden netting. This would not answer quite so well as glass frames, but, on the other hand, no attention is required. He informs me that heavy rain drops are broken by the netting, and fall on the plants in the form of spray. The netting is also a sufficient shelter from high winds. No water should be applied to the plants for at least a week after potting. It is very desirable that each class and section be kept separate, and the varieties should also be arranged alphabetically so that any particular kind may be readily found. Begin potting the scarlet Bizarres, following on with crimson Bizarres, then pink and purple Bizarres; next come the flakes purple, scarlet, and rose in their order. Take of Picotees the red-edged first, following with purple and rose-edged, and lastly all the fancy varieties, comprising self Carnations and yellow-ground Picotees.

Hollyhocks.—The plants propagated in spring will not be quite ready to plant out until the first week in April, but old plants potted up in the autumn and cuttings struck at that time may now be

planted out on the first favourable opportunity. The work can be done even if the border be not in good condition, if there is a reserve of dry loam to place round the roots. I always do this with fine sorts; about two or three spadefuls of soil are taken out, and as much of the prepared soil put in its place; a compost of two parts dry loam to one of rotten manure from spent Mushroom beds answers well. See that the soil in the pots is quite moist before putting the plants out; this is better than watering after planting them.

Pansies in Pots.—For a cottager or amateur who cannot afford the luxury of a greenhouse, there are no plants better adapted for producing choice early flowers than these, or that can be propagated either from seeds or cuttings with so little trouble. Of course seedlings that had not flowered would not be grown in pots, which should contain only the choicest varieties. See that air is freely admitted to the frames in order to prevent the growths from being drawn up weakly. Only shut up close on frosty nights. Give manure watering at every alternate watering, as soon as the soil in the pots is well filled with roots. If the frame faces the south, it will be necessary to shade it, in order to preserve the flowers, during a few hours in the middle of the day.

Primula cortusoides and other kinds grown under glass are now making rapid growth. The pretty little *P. nivalis* should be grown in quantity; its delicate pure white flowers are very sweet, and are freely produced. *P. japonica* may be grown for the sake of variety, but it cannot be said to be either a king or queen amongst Primulas. The finest single and double forms of the common Primrose are easily grown; what they all want at this season is no lack of water at the roots, attention to cleanliness, and free ventilation. Insect pests are very annoying, and must be destroyed.

Tulips.—These are now mostly through the ground, and, to all appearance, are making a very healthy growth. One does not know what a day may bring forth, but with the 1st of March came a change for the better. The plants should, however, be protected from severe frost should it again occur, and that can be done as recommended in previous numbers. Hexagon netting, as used by Mr. Dodwell for his Carnations, I would prefer to any thicker covering.—J. DOUGLAS.

Hardy Fruit.

At length the long desired change in the weather has taken place, and with it comes a formidable array of arrears of work, which will require the most persistent energy to overtake. First and foremost should be the planting of any fruit trees that has yet to be done, after which, complete the pruning and nailing of all wall fruits, especially those that are on southern and western aspects; the trees on the northern and eastern walls are not so forward, and can, therefore, be left to bring up the rear. Fortunately, the protracted cold has had one good effect, and that is, that even if vegetation now should make the most rapid progress, all kinds of fruit will be later in flower than is usually the case, and, consequently, there is greater ground for hope that they may escape spring frosts, which are oftentimes so disastrous. A finer prospect of an abundant fruit season could not possibly be than there is in this district (North Hants) this season, and happily the birds have, by the hard winter, been thinned to something like a reasonable limit; therefore, there is little danger to apprehend from that quarter; still vigilance will be requisite to ward off any attacks which they may yet make, and also to have in readiness all protecting materials, to be applied as soon as the blossoms begin to burst. A few mild days will start all trees into active growth, and grafting of new or improved varieties of fruit on inferior kinds, can now be done. If the stocks were headed down a couple of months ago, all the better, though this need not be an obstacle, as no real harm will be done by cutting them down now. Cleft or wedge grafting is that which we practise and recommend as being at once simple, expeditiously done, and effective. Work the clay well over the grafts in order to exclude both air and rain, and keep a reserve of clay to renew any damage that may be caused by frost loosening it from the stocks. Cuttings of Gooseberries and Currants can be made on wet days, and be planted now at any time. Single-stemmed bushes should always be preferred; therefore select the young growths of last year, which should be at least 9 in. long, twelve or fifteen not being too much. Pick out all the eyes or buds except two or three at top, and plant firmly in rows 18 in. apart and 6 in. apart in the row. They will root in a few weeks, and as growth proceeds pick out any buds that may appear near the surface of the soil or through it, the object being to form a tree that shall have a single stem, and be free from suckers. Transplant any cuttings that were put in last season, giving them about double the space which they have had as cuttings, and next year they will be sufficiently large to form permanent plantations. Established plantations of Gooseberries and Currants should be lightly "pointed" over and a liberal mulching of stable manure be afterwards given

them; lacking this, give them a dressing of lime, soot, or wood ashes, or the three mixed together, in which case the mixture should be applied when the trees are damp, and if thrown over them as well as on the ground, some of it will adhere, and not only kill Moss and Lichen, but keep off mischievous birds. Some varieties of Strawberries have suffered severely during the winter, and any not mulched prior to the frost setting in, are sure to be permanently injured. Any thus affected had best be uprooted forthwith, and new plantations formed from the runners pricked out in reserve beds last autumn. Of course no fruit can be expected from such plants during the present season, but the best runners for next season's forcing may be obtained from them, so that they will be of some service if planted thus early. Figs that have been matted or coiled up with hay bands for the winter may now be uncovered, but they should be nailed at once or tied closely to the walls to be clear of frost. Thin out any weak or unripe shoots, but avoid cutting them more than is absolutely necessary for the full exposure of all the branches to light and air. If the trees are in full bearing vigour use manure freely over the surface; but if strong-growing and shy as regards fruiting, partially root prune by taking out a trench at a reasonable distance from the stem, and cutting off a few of the largest roots; then fill in with the same soil without any admixture whatever. Keep all strong growths constantly pinched during the summer, and this, with impaired root action, will conduce to fruitfulness another season.—W. W.

Kitchen Garden.

Now that favourable weather has set in all vacant ground should be dug and all crops of a doubtful character, such as frost-bitten Lettuces, Broccolies, Cabbages, Globe Artichokes, &c., should be removed. Parsnips and Carrots that have been wintered in the ground should also be got up before they start into growth, and the ground can then be got in readiness for other crops. Celery already manifests a tendency to bolt, and, where such is the case, it is best to lift it and heel it in under a north wall, an operation which not only retards the Celery, but sets the ground which it has occupied at liberty for Peas, Potatoes, and similar crops. Winter Spinach, though much damaged, is, with the two or three milder days which we have had, starting into growth, and this crop may therefore be left till the Spinach, now to be sown, is ready to pick. It may then be dug into the ground as manure, and the plot set apart for Potatoes or the earliest batch of Broccoli, either of which do well as a successional crop to Spinach. Seed sowing will now be the most pressing operation, and a suitable seed bed being the first stage of the ladder, neither labour nor patience should be spared in preparing it. Light soils need little beyond well firming in order that the drills may be drawn neatly, but heavy soils will require the surface to be worked about on fine days, and the drills will require a couple of days or so prior to putting in the seeds; if the drills, too, can have a coating of lighter soil or the seeds be covered in with such, the success of the crops will more than compensate for the extra labour. Considering the fickle character of our spring months it is yet too soon to plant the general stock of Potatoes, though, considering the liability to disease when the tubers are late in maturing, one hardly knows which is the greater of the two evils, that is, the haulm to be cut down with spring frosts or the tubers destroyed by murrain. In any case, I would recommend the risk to be made of planting a good breadth of the first early kinds, and, as soon as the tops show above ground, draw the soil over them, and when this can be no longer done cover them with long stable litter till all danger from spring frost is over. If the ground be dry and has been deeply trenched or dug, dibble the sets in in preference to planting them in drills, but in wet or tenacious soils drill planting is preferable because the sets can then be covered, as they should be, with dry mould or vegetable refuse, such as leaf soil, the ashes from refuse heaps, and similar material, all of which assist in the production of clear tubers. Preserve the straightest medium-sized old roots in Seakale that has been forced, for the purpose of forming new plantations, work which may now be done, as cuttings are forthcoming for the purpose. Cut them into lengths of from 4 in. to 6 in., and plant them in rows 2 ft. asunder and 18 in. apart in the row. A long dibber is the most convenient implement for the purpose, and the tops of the cuttings should be covered with at least a couple of inches of soil. Of course the deeper and richer the ground is, the finer will be the Kale to be had for forcing next season. Horseradish may be planted in exactly the same way, but such a plantation should not be used for a couple of years. As regards forced vegetables, Rhubarb will now need little beyond the crowns being covered with pots, to keep up a constant supply. Seakale, also, will readily start into growth by covering the crowns with cinder ashes, or old tan, and the Kale is sweeter when thus produced than it otherwise would be. When there is no provision for forcing Asparagus on the ground, such as frames or pits, another batch must be lifted to

maintain the supply till the open-air produce is ready. French Beans will now do best if sown in a pit or frame, such as that from which the earliest Potatoes have been dug. A slight bottom heat, and a top heat of 60°, are all that is required. Sow thinly in rows a foot apart, and earth up with light rich mould as growth proceeds. To Carrots, Radishes, Potatoes, and Canflowers, air must be freely given whenever the weather is favourable; the latter will "button," if kept too close or crowded. W. W.

Extracts from my Diary, March 10 to 15.

Thinning Grapes. Shifting Strawberries that are set from Muscat house into Melon house, to swell their fruit. Digging ground lately cleared of Celery for Onions. Sowing west border with Carrots. Sprinkling with artificial manure, cultivating and drilling south border for Potatoes. Putting in Muscat Vine eyes. Propagating Verbenas and Ageratums. Sowing Lobelias and Schizanthuses. Earthing up Potatoes in frames. Sowing east border with Student Parsnip and James' Intermediate Carrot. Planting south border with Alpha, King of the Earlies, and Early Hamsworth Potatoes. Planting first batch of Melons. Tying Tomatoes in fruiting pit. Tying Cucumbers. Potting Ferns. Sowing first batch of Turnips between Rhubarb. Sowing first batch of Celery. Putting lights on Peach wall as protection from frost. Staking Peas in boxes in cold houses. Hoeing and cleaning Asparagus beds. Sowing Pyrethrums. Thinning Mignonette in pots. Putting in Vine eyes, consisting of Gros Colman, Duke of Buccleuch, Pearson's Golden Queen, Canon Hall Muscat, and Bowwood Muscat. Sowing Begonia seeds. Staking and tying Roses. Getting in another batch of Asparagus into Mushroom house. Tying and stopping Vines in Hamburgh house, first time. Tying up Vines in Muscat house. Propagating Begonias. Planting Magnam Bonum, Ripley's Seedling, Haigh's Seedling, Old Lapstone, and Uxbridge Kidney Potatoes. Pruning and nailing Pears and Morello Cherries. Forking twich out of Asparagus beds. Getting Roses, Deutzias, &c., that have been forced from cold houses to the open air. Shifting pot Vines. Potting Gloxinias, Calanthes, and Calceolarias. Pruning and nailing Pears. Protecting Peaches on walls with netting. Staking Pyramid Apples; also first crop of Peas outside. Potting a batch of French Beans. Clearing ground of Brussels Sprouts, &c. Making new lining to hotbed in frames. Sowing Poinsettia seed and a pan of Lavender. Clearing off and cultivating ground for Potatoes, and giving it a top-dressing of old sawdust. Potting next batch of French Beans. Planting International Kidney Potatoes. Emptying fine store of Rhubarb for pot Vines. Making fresh lining to pit for Pines. Thinning Grapes. Tying Peaches in early houses. Pruning and nailing Cherries and Figs on east wall. Planting after Brussels Sprouts early Vermont Potatoes for seed, also a few single rows of different varieties for stock only. Tying, stopping, and disbudding Vines in Hamburgh house. Thinning Grapes in pot Vinery. Putting a little soil over Peas in pots in cold houses. Making a fresh Cucumber bed in the Pine store. Getting half-hardy plants out of span-roofed house. Re-arranging plant houses.—R. GILBERT, Burghley.

NOTES FROM KEW.

Greenhouse Plants.—Another addition to the lovely Himalayan Rhododendrons mentioned last week is a silvery-leaved kind (*R. argenteum*), which is remarkably handsome and distinct. The plants are from 6 ft. to 10 ft. in height, and have leaves nearly 1 ft. in length and proportionately broad, their under surfaces being silvery. The heads of bloom are very large and dense; the individual flowers, which are bell-shaped, measure upwards of 2 in. across the mouth, and vary in colour from a pale sulphur-white to a delicate pink, with a central dark blotch. It inhabits the lofty mountain peaks of Sikkim, where it forms with many others a very striking feature in the landscape, often growing 30 ft. high. It first flowered in this country (at Kew) about twenty years ago. The yellow-flowered *Chorozeoma* (*C. flavum*) is an elegant little Australian shrub, with small, Holly-like leaves, and it is a desirable kind on account of its distinct colour, as the majority of *Chorozeomas*, though they differ in foliage, bear flowers which strongly resemble each other. The charming little single-flowered *Milla* (*Triteleia*) uniflora, a native of Buenos Ayres, associates admirably with other showy plants, the stee-like, pale purple blossoms, abundantly produced, being highly attractive. It is scarcely necessary to add that this desirable bulbous plant is perfectly hardy, and that, ere long, it will help to enliven outside borders. It is very variable in point of colour, for, even in a small batch, some marked varieties may be detected, and two in particular deserve notice, viz., conspicuous, of a deeper shade than the type, and lilacina, with conspicuous violet-blue stripes down the centre of each division. *Eriostemon*, when covered with pure white, star-shaped blossoms, nearly 1 in. across, are very showy. Two kinds now in flower closely

resemble each other, viz., *E. cnepidatum*, with narrow and sharply-pointed leaves, and *E. myoporoides*, with the leaves much broader. *Cytisus filipes*, a shrub growing from 3 ft. to 4 ft. high, of a very gracefully drooping habit, is well adapted for interspersing with plants of rigid growth, the branches are long, very slender, and leafless, and are covered for the greater portion of their length with small white blossoms. *Viburnum suspensum*, a Japanese shrub of no great beauty, is desirable for the sake of variety. It is of dwarf growth and produces numerous clusters of whitish blossoms, resembling those of the common *Laurustinus*. The huge plant (40 ft. high) of the New Holland Silver Wattle Tree (*Acacia dealbata*) is now splendidly in blossom in the Temperate House. The profusion with which the clusters of golden blossoms are borne, added to the elegant silvery foliage, renders it one of the most desirable of the numerous family to which it belongs. It is, moreover, extremely useful for cutting purposes, as it lasts in good condition for a considerable length of time.

Orchids.—Though an old introduction, and now tolerably common in gardens, but few *Dendrobies* can rival *D. Devoniaum* for beauty and gracefulness. The flowers, which are about 1½ in. across have a large, roundish lip, beautifully fringed at the margins, and furnished with a large central yellow blotch which contrasts finely with the delicate bluish tint of the other parts. These are plentifully produced on long, slender, pendulous stems, on which account it is best adapted for basket culture. It inhabits the Khaysa Hills and other places in North-east India. Scarcely less beautiful, and now apparently becoming rare, is *D. mutabile*, better known, perhaps, as *D. tridienium*, a continuous blooming kind, but more freely at this season than at any other. The flowers, which are rather small, are white, sometimes with a rosy tint and a bright orange spot in the centre, and they are borne in clusters 3 in. long. It is a native of Java. Of quite a different style of growth is *D. densiflorum*, which has stout, erect stems terminated by two or three leathery evergreen leaves. The clusters of blossoms are very dense and of a bright orange colour, but, owing to their short duration, this *Dendrobe* will never become such a popular favourite as many of its congeners. Except for the delicious perfume of its flowers, the Crisped *Rodriguezia* (*R. crispata*) is scarcely worth consideration, as the blossoms are of a dull green unattractive appearance. The same may be said of the curious little *Notylia notialis*, though it possesses a more aromatic fragrance than the preceding, much resembling that of *Cowslips*. It has been aptly remarked that the Lily of the Valley among Orchids, is *Odontoglossum pulchellum*, as the chaste beauty of its waxy, pure white blossoms, mingled with the deep green foliage, at once reminds one of that flower. The variety called *majus* is superior to the type in point of size, if that be a recommendation, but both well deserve to be accommodated even in the choicest collection. The rosy *Odontoglossum* (*O. roseum*) possesses a colour rarely seen in the genus, viz., a deep rose, that renders it highly desirable, being about the size, form and colour of *Mesopidinium vulcanicum*, but it may at a glance be distinguished by its different habit. *Chysis Thorswaldseni* produces remarkably handsome flowers, 2 in. across, white, with a golden dash on the lip, and the whole flower of very firm texture, though apparently it does not hold its beauty long. The Crested *Coleogyne* (*C. cristata*) is a general favourite and has but few rivals in that numerous family. The pure whiteness of its large flowers, relieved by the bright yellow crest, contrasts admirably with the deep green leaves which invariably accompany them, and set them off to advantage.

Stove Plants.—In the Palm house, the large-leaved *Clavija* (*C. macrophylla*) is now very attractive. It is a stately shrub about 10 ft. high, with a naked, erect stem terminated by a huge head of ample foliage. The flowers are small, somewhat globular, of a bright orange colour, and borne in long pendulous racemes which are abundantly produced from the axils of the leaves and also from the naked stem. It is a native of Brazil. Near this is another handsome flowering shrub, viz., the Myrica-like *Cyclonema*, a member of the Verberna family and a native of the eastern coast of Africa. It is about 3 ft. high, with heart-shaped, coarsely-toothed leaves, from the axils of which spring numerous loose clusters of blossoms which resemble in form those of a *Clorodendron*—white suffused with pink, and a clear blue, lip-like, lower petal. *Higginsia Ghiesbreghtii* is remarkable more for the rich velvety hue of its reddish-purple, lance-shaped leaves than for the beauty of its blossoms, which are produced in dense clusters at every joint on the stem, and comparatively inconspicuous. As a fine-foliated stove plant few can surpass it, and it is for this purpose that it is strongly recommended. *Crinum ornatum* is a lovely tropical, bulbous plant which, besides possessing a stately habit, has long, bold foliage. Its flower stem rises nearly 5 ft. in height, terminated by an umbel of about a dozen large blossoms of a delicate bluish tint and sweet scented.—W.

NOTES OF THE WEEK.

Saxifraga Burseriana.—This charming Saxifrage is now in bloom in Messrs. Henderson's nursery at St. John's Wood, both in cold frames and in the open air. Small plants of it in 3 in. pots, sheltered from rain and snow, bear eight or nine beautiful snow-white blossoms, each nearly as large as a shilling. In any sunny border or on rockwork this Saxifrage grows freely, and flowers most profusely; and it would also be quite at home in a cold house, where secure from snow and rain its beauty would be unimpaired.

Snowdrops on Stonecrop.—These prettiest of all our early spring flowers have come up from the beating down which they had by the heavy snow looking as fresh as ever. I have some now in full bloom on a carpet of green Sedum, and the effect is most satisfactory. I shall plant with them next autumn bulbs of the Siberian Squill, as these are much cleaner on a carpet of this kind than when growing out of the soil without such protection.—A. D.

Rhododendron myrtifolium.—This is well worth growing in quantity for early flowering, where cut blooms or attractive conservatory plants are required. It is compact in habit; its flowers, which are as small as those of a *Kalmia*, are of a delicate pink colour, and being produced in close trusses, are very convenient for cutting. It is grown by Messrs. Osborn, of Fulham, in whose nursery it is now in flower.

Masdevallia Veitchii.—Like most other Orchids, this varies greatly both in the size and quality of its blossoms. The best variety of it which we have yet seen is now in flower in one of the Orchid houses at Gunnersbury. The size of the bloom is larger than that of any other *Masdevallia*, whilst it is perfect in form and indescribably brilliant.

Apelandra aurantiaca Roezli.—This is grown in quantity by Mr. Roberts at Gunnersbury. The plants, which are in 6-in. pots, are bushy, well furnished with marbled leaves, and produce large quantities of spear-like heads of brilliant scarlet blossoms. Though of little value for furnishing flowers for cutting, plants of this *Apelandra* are very useful, and have a handsome appearance in vases or for furnishing the front rows on conservatory stages.

Rhododendron Falconeri.—This, one of the finest of the Himalayan Rhododendrons, is now in flower in Messrs. Downie & Laird's Winter Garden at Edinburgh, where it is bearing no fewer than thirty-nine trusses of beautiful, large, creamy-white blossoms. The plant in question is some 7 ft. in height.

Old Azaleas at Fulham.—The old and excellent plants of Ghent Azaleas, for which Messrs. Osborn's nursery has long been noted, promise this year, in spite of the late severe winter, to bloom equally well as in former years. The buds are very numerous, and have not suffered the slightest injury from frost, thus showing that these charming flowering shrubs may be planted with safety even in the coldest districts.

Hardy Plants in Flower at Tottenham.—Among the best of these may be mentioned *Saxifraga Burseriana*, *Crocus Imperati*, *C. Olivieri*, *C. Sieberi*, *C. biflorus*, *Muscari Scavittianum*, *Hepatica angulosa*, *Cyclamen*, and several varieties of *Hellebores*; *Narcissus Clusii*, *Fritillaria pudica*, and *F. Karelina* are also in bud. Indoors the *Lachenalias* are very gay, especially *L. quadricolor*. I have had them in flower since October. *Begonia Fendleri* is magnificent. What a grand winter-flowering plant it is! *Hemantus cinnabarinus* is also very showy, but not hardy. *Primula erosa* and *Imantophyllum miniatum* are also in bloom.—A. P.

Camellias at Fulham.—A large house devoted to these in Messrs. Osborn's nursery at Fulham is now very gay, many plants, consisting of the best known kinds, being profusely in bloom. The plants are of home growth, very vigorous, and are in every way preferable to those of foreign growth, the blooms being larger and more perfectly developed, whilst the buds are less liable to drop. Over the Camellias are trained Tea Roses, a plan which shows us how charming a house can be made by means of such a combination. If the Roses be trained close under the glass, and not allowed to get too thick, they would afford that partial shade in which Camellias delight.

Dendrobium Ainsworthii.—This is, without doubt, the best of Hybrid Dendrobies, and of this, even, there seems to be inferior as well as fine varieties. The best which we have yet seen is now in flower in Messrs. Veitch's nursery, Chelsea, where it originated from a cross, made by Mr. Soden, with a fine variety of *D. nobile* *coeruleum* and *D. heterocarpum*. The flowers are larger than those of any other *Dendrobium* in the section to which this hybrid belongs; its petals are of fine form, broad, waxy, and pure white, set off to

advantage by a rich dark purplish-crimson throat. Inferior varieties, under the same name, in the nursery just alluded to, and which originated elsewhere, the result of a similar cross, were obtained from varieties of an inferior quality in the first place, thus showing that in cross-breeding there is a great advantage in selecting the very best varieties of the species which are to be the parents.

Galanthus Imperati.—This fine new Snowdrop is slightly earlier than either the common or the Crimean Snowdrop. It has larger flowers and longer stalks than the two last-named.—R. P.

Rhododendron Hodgsoni.—This Sikim Rhododendron, is, according to the "Irish Farmers' Gazette," finely in bloom at Glasnevin, where it is quite a tree some 12 ft. or 14 ft. high, well furnished, and carrying no fewer than 160 gorgeous heads of rosy-purple flowers. Several other species are also now in bloom in the same house.

Cyclamen coum vernum.—Notwithstanding the inclemency of the weather, this beautiful little harbinger of spring now forms a lovely object on the rockery at York.—R. P.

Azalea viscosifera.—This is one of the best of the Ghent Azaleas for forcing. Its flowers, which are pure white—except that the upper petal is slightly tinged with yellow at its base—are deliciously fragrant, and valuable for bouquets. We saw plants of it in bloom lately in Messrs. Osborn's nursery at Fulham, in company with *A. mollis* and other varieties; also well flowered examples of the common *Gaelder Rose* (*Viburnum Opulus*), *Rhododendrons*, berried *Aucubas*, and forced *bus*.

Orchids at Gunnersbury.—In the fine collection of Orchids in Baron Rothschild's garden at Gunnersbury, are just now several plants in flower well worthy of notice. Prominent amongst these is the rare *Odontoglossum Andersonianum*, bearing two gracefully arched branching spikes, beset with no fewer than 200 waxy, cream-coloured, beautifully spotted blossoms. *O. Alexandræ*, a fine variety, is in equally good condition, the flowers measuring from 4 in. to 5 in. in diameter, of satiny whiteness suffused with violet, the lip being of bright gold marked with brown spots. *O. cirrhosum* is also producing a fine spike of bloom. *Phalopsis grandiflora*, and *Schilleriana* growing in wooden baskets along the front of one of the houses are likewise very effective, a narrow stage under them being clad with *Selaginella denticulata* and *Panicum variegatum*, which being kept moist serve two purposes—that of giving the house a pleasing appearance, and benefitting the Orchids.

Prizes for Amaryllis.—An amateur, anxious to encourage the cultivation of this tribe of plants, offers the following prizes to be competed for at the Royal Horticultural Society's meeting, to be held at South Kensington, on April 8. The prizes offered are:—A. For the best dark seedling, 1st prize, £2; 2nd, £1; for the best light seedling, 1st, £2; 2nd, £1. No prizes will be awarded unless the seedlings show decided form and substance of bloom. B. For the best six *Amaryllis*, named, three to be dark and three light varieties, 1st, £2; 2nd, £1. The prizes to be awarded only if the exhibits be considered of sufficient merit. Form, substance, and breadth of petal are necessary points. C. For the best variety selected from among the plants exhibited in class B—For the best dark variety, £1; second best, 10s.; for the best light variety, £1; second best, 10s.

Orchids in Flower at Chelsea.—The Orchid houses in Messrs. Veitch's nursery at Chelsea are, at present, very gay, with flowering plants of some of the best and most popular varieties. Amongst others are especially notable *Dendrobium crassinode*, grown in baskets and small pans, and thickly beset with blossoms; *D. Wardianum*, in equally good condition; and specimen plants of the old, but useful, *D. nobile*, growing in pots, are perfect masses of blossom. *D. Farmeri* bears large drooping bunches of white and yellow flowers. *D. Findleyanum* is a very delicate-flowered variety, with violet-tinted petals and lemon-coloured throat. The curious blood-red *Maxillaria Turneri* is also in flower, as is likewise *Angraecum citratum*, the pretty white flowers of which are set in thick rows on the upper side of long, arching flower-spikes. In addition to these are the beautiful Hawthorn-scented *Odontoglossum madrense* and *O. Roezli* roseum and album, fine varieties; the rare *Epidendrum Wallisi* also bears flowers with waxy, cinnamon-coloured petals and white, purple-traced lip. Many *Lycasts* are also in bloom, and *Cattleyas*, of the *Triana* section are well represented. To these may be added *Odontoglossum praetense*, *O. gloriosum*, *O. Halli*, *O. nevadense* (a kind having flowers with chocolate petals, barred with greenish-yellow, and a white lip), *O. Alexandræ*, and *O. cirrhosum* in great variety.

Lily Bulbs.—I have to thank Mr. Smith for his reply (p. 178), but I differ from him on the subject of the bulbs, as I agree with the writer in the "Californian Horticulturist" (p. 118), as regards "the decay of the old bulbs and the formation of new ones internally."—B.

ANSWERS TO CORRESPONDENTS.

Evergreen Ferns.—Can any correspondent kindly give me a list of a few medium-sized evergreen Ferns, whose fronds will not turn yellow during the months of December, January, and February in a greenhouse where the temperature ranges from 46° to 56°, as almost all of mine have done, at the very moment when they were required for table and other decoration.—D. [The following Ferns, suitable for a cool or intermediate house will be found, if properly treated, to be in good condition during December, January, and February, and other dull parts of the season, viz., *Asplenium Belangeri*, *A. bifurc.*, *A. lucidum*, *Aspidium cespense*, *A. falcatum*, *Dicetyrogramma japonica*, *Gleichenia semper-virens*, *Gymnogramma Massoni*, *G. Calomelanos*, *Nephrodium glabellum*, *Nephrolepis undulata*, *Oncophyllum japonicum*, *Polypodium sub-africanum*, *Todea barbara*, *Woodwardia radicans*, and *W. r. cristata*. All these have bright clean-looking foliage.—J. B.]

Zonal Pelargoniums for Culture under Glass.—Would you assist me by naming a dozen and a half good Zonal Pelargoniums. I am anxious to add to the greenhouse collection which I already possess, and which is not large. Constant and free bloomers, producing large trusses, are what I am anxious to get, besides being distinct varieties. Would you also name two of the best white kinds? Are *Leamington Lassie* and *New Life* good and free bloomers?—K. T. [The following will possibly answer your purpose, viz., *Mrs. Wright*, deep rose; *Miss Gladstone*, white, with a pink centre; *Colonel Thomson*, brilliant crimson, with a white eye; *Sybil Holden*, soft rose purple; *J. C. Masters*, purple and crimson; *Circulator*, rosy-scarlet; *David Seely*, crimson-scarlet, with a white eye; *Lady Sheffield*, violet-purple-pink; *Lizzie Brook*, rosy-crimson; and *Tom Bowling*, orange-scarlet. *Jeanne d'Arc* and *White Vesuvius* are two good whites.—H. C.]

Heating Small Greenhouses.—For a house like that described by Mr. L. J. Browne (p. 172) I should recommend a small—say 20 in. long—common saddle boiler as the cheapest, safest, most efficient, as well as most economical, both as regards fuel and attention, that can be adopted. A 24 in. one will heat two houses such as that named. A flued saddle is preferable to the ordinary form where there is work enough for it to do; but they are not made small enough to heat a single house, similar to the one in question, and to have a boiler too large proportionate to the amount of piping attached to it is to incur the certain annoyance of its driving the water in quantity out of the feed cistern when the fire has to be kept going briskly in severe weather. The coil boilers mentioned (p. 176) often do their work fairly well, but I very much prefer a saddle, especially for such places as those under consideration, where, if well set with a roomy furnace, it will burn up anything, and require correspondingly little attention.—T. BAINES.

Cucumbers in Houses.—I am building a little house for Cucumbers, salads, &c., for market, and in the winter to keep bedding plants, as I do not think it will pay to grow Cucumbers in the winter, and being only a garden labourer, I have not much capital. I want, therefore, to grow what will pay best. My house is 12 ft. long and 6 ft. 6 in. broad, lean to against a wall 9 ft. high at the back and 4 ft. brickwork in front with 2 ft. glass, making it 6 ft.; then I get 3 ft. fall for the roof, with glass ends. I think of building a flue along the front for bottom-heat, crossing the end and along the back. Will you kindly tell me whether brick flues or iron pipes would be the best, and what distance should the wires for training the plants be from the glass? and how far apart? Also what is the best Cucumber for the purpose? and how deep ought the bed to be for the mould? and how wide and what distance apart should the plants stand.—C. C. [A flue will answer if you only want to grow Cucumbers during summer, and if this be built in the way you propose, you will get sufficient bottom-heat. The wires should be about 15 in. from the glass, and about 12 in. apart. String will answer the purpose as well as wire. The best Cucumber for the purpose is *Rollison's Telegraph* or *Tender and True*. 6 in. or 8 in. of mould will be enough to plant the plants in; if you earth them up afterwards as the roots appear on the surface of the soil. The plants should be 2½ ft. apart, but you can plant as thickly again as this if desirable, and crop each alternate plant whilst in its young state, destroying them when the rest have become well established. With a flue abundance of moisture must be kept in the house or red spider will soon get possession of the leaves of the plants.—S.]

Names of Plants.—J. W.—*Acacia lophantha*, a native of New Holland. *W. B.*—1, *Nipholobus Lingua*; 2, *Polypodium Billardieri*; 3, apparently some *Maxillaria*, of which some better specimens should have been sent.

Names of Fruits.—J. D. B.—1, Some local variety undetermined; 2, *Hanwell Souring*.

Questions.

Cutting down Arbutus.—I have an *Arbutus* hedge twenty years old, that is now too high. If the *Arbutus* be cut down close to the ground, or leaving a few feet of stem, will they be likely to sprout again?—E. F.

Eucalypti.—Where can I purchase small plants of *E. amygdalina*, or seeds of it? I find many notices of *Eucalypti* in THE GARDEN, but no mention of where to obtain stock or seeds of them. In several gardens here, the *Eucalyptus globulus* had attained a height of about 20 ft., but the severity of this winter has killed them all. Prince Troubetzkoy reports *E. amygdalina* to have withstood 6° below zero centigrade (21° Fahr.) at Rome. It might therefore succeed in Devonshire.—EXMOUTH.

Cyclamens.—Some flowers come very jagged and others are small and poor, although grown from the very best seed, and having good bulbs and foliage. Ought I to throw such away, or will there be a chance of improvement if I grow them on for next season? I find *Auriculas* to vary, but I fear a *Cyclamen* once poor is always poor. Can any *Cyclamen* grower give me a word of advice on this subject.—BROCKHURST.

Flower-bed Arrangement.—Can any advise me about a bed I propose making in a hedged-in Grass court. It is to be seen from a distance of 30 ft. My idea is an oval bed 8 ft. long and 5 ft. in breadth, to be planted with *Avicula Sieboldi*, *Yucca recurva*, and *New Zealand Flax*, supplemented in the summer with *Colusa* and *Iresine*, and *Candavea candidissima*, the rest of the bed to be permanent or protected with hurdles or matting next winter. I propose to put in the *Aralias* and *Yuccas* of about 1 ft. high, also the *New Zealand Flax*. But, as I am ignorant of their relative rates of growth, I wish to ascertain how many of each I may require, and how they should be arranged; whether it is indispensable to place the *Flax* in the centre, or whether I should centre the bed with a pillar *Rose*, or a drooping flowering shrub, or one of slender, erect growth. In the latter case what would be the best *Rose* for the purpose, or the best shrub? I do not want *Willow*, *Laburnum*, or *Almond*. The Grass court is oblong, sheltered, moderately sunny, but the soil is heavy, cold, and damp; county, Oxfordshire.—AZUCENA.

THE INDOOR GARDEN.

AMATEURS' GREENHOUSES.

If the thousands of amateurs who possess greenhouses, such as "Delta" (p. 138) describes his to be, were to follow a similar course as regards the plants grown by confining themselves to those they can accommodate in a way calculated to admit of their thriving satisfactorily, there would be less disappointment than there now is. It does not follow that every one with similar accommodation must needs grow the same kinds of plants exclusively. People's tastes and fancies differ with respect to these as with other things. The secret of success with amateurs who rely principally upon their own knowledge in, and attention to, what they cultivate, is to keep principally to such subjects as they can manage, and not attempt more variety than the capacity of the house or houses which they have will permit. This is just what the majority do not do, but, instead, get a bit of almost every plant with which they meet that takes their fancy, until the generally limited room is crammed up to an extent that makes it impossible for all to do more than exist, and when any of the least deserving, it usually happens to be these, get too large the owners have seldom courage enough to clear them out.

"Delta's" practice is also an example of that which I have always urged upon amateurs, viz., the advisability of growing some Grapes in their glass houses, especially where they have two, or one in which there is a division, for, although by real lovers of flowers, the continued opportunity which a greenhouse affords for enjoyment all the year round is often felt to be sufficient for the trouble and comparatively little expense entailed, yet there are few who will not acknowledge that good Grapes are not also always acceptable, and that both these and plants can be grown together equally presentable is evident by what we see continually accomplished. The principal thing to keep in view where both fruit and plants are to be grown together is, that whether one, two, or more Vines are planted according as the size of the house and other circumstances will allow, the roof is not covered to more than half the extent that would be admissible if Grapes alone were grown in the house, and that the plants, which must necessarily stand underneath, have comparatively more room than if there was nothing over them. This precaution, coupled with greater vigilance in looking out for insects, will enable those who like to grow both Grapes and plants to gratify their inclination, even when the means available are no greater than those which "Delta" has. I do not mean to assert that either the plants or the Grapes can be had long in appearance to those produced under separate treatment, but it is what I should adopt myself under like circumstances.

In respect to the means by which "Delta" warms his house with a flue composed of large drain pipes, it is far from a safe method, as I can testify both from my own experience and the break-downs which I have seen in the case of others who have adopted a similar mode of heating. Even when the precaution had been taken as "Delta" describes, of having several feet of brickwork adjoining the fire before the tiles commence,

and with a strict attention in keeping the pipes swept clean of soot, accompanied by careful stoking, I still found that, as with a brick flue, the soot would nevertheless sometimes get on fire, the invariable result being cracking of the tiles. This occurred when they were made of different descriptions of clay, both glazed and unglazed, and after they were cracked, if the fire charged at all, it generally separated those that were so affected, with the consequent admission of smoke and sulphur, the destructive effects of which it is not necessary to particularise. In my own case, instead of having the pipes round the house continuous, I had in each corner a short length of ordinary flue covered with stone flags, which much facilitated the sweeping process, but from the cause I have named I had them out, and a brick flue put in their place, made, as I would always advise where this system of heating is to be used, with the bricks on bed not on edge, that is, $4\frac{1}{2}$ in. work instead of 3 in. This is so much stronger, less liable to crack, or be shaken and leaky through age, getting on fire, or the furnace charging, that it is much to be preferred; it takes very little longer to get up the heat in these stronger made flues, than with such as are built brick on edge, and the additional substance enables them to retain heat longer after the fire has burnt down, so that the little time which is lost after the fire is lit, is gained in the opposite direction. But, now, when hot water pipes are so easily and expeditiously put together with indiarubber rings, yarn, and red lead, or Portland cement, there is little need for the apparatus costing much more than a flue; and if the furnace for the boiler—a common small saddle is the best in cases of this sort—be made with a view to economy, it will burn up all the cinders and refuse from the fires in a dwelling house. The fire space must be roomy, so that the work can be done on the slow combustion principle, which, to be successful, needs a good body of fuel, as a matter of course, with a damper to regulate the draught. A handy man, such as "Delta" speaks of, with a few hints from any intelligent cultivator who understands this description of work, and who is generally to be found in every neighbourhood, would succeed in putting in a simple hot-water apparatus without much more difficulty than a flue. My reason for here recommending an ordinary saddle in preference to one constructed on the improved principle, with flue and terminal end, is that none of the latter are made but what are much larger than required for one or two small houses, and the price of the common saddles is a good deal less.

T. BAINES.

THE OAK-LEAF PELARGONIUM.

In answer to "B. S.'s" inquiry (p. 164) concerning this Pelargonium, I can certainly say that it long survived the "Pig tails" with which "B. S." somewhat oddly associates it. I know not when these appendages went out of fashion, I only remember seeing one some fifty-five years ago at least; but I have met with and grown the Oak-leaf Pelargonium down to a far later period, and I have no doubt that it may yet be found if perseveringly looked after. When I saw the last plant of it I cannot recollect, but I well remember bedding the variety out. It was a great favourite with us before the zonals made their appearance. This Pelargonium cannot well be confounded with any other, and, moreover, it is figured in "Ourtia." "B. S.'s" plant is not, however, Pelargonium quercifolium, but P. glutinosum. The true Oak-leaved Pelargonium is a much smaller and neater plant, something in the style of the old Moore's Victory, and may be met with in nurseries and gardens under the name of Fair Helen, and is, as regards flower, one of the most beautiful of all the Cape Pelargoniums. Moore's Victory I have not seen for many years, and, like the once famous P. Dayvannum, is perhaps lost. It is surprising that the Cape Pelargoniums have not been taken in hand more earnestly than they have been, containing, as they do, some of the most powerfully scented plants known. They also possess an infinite diversity of foliage, and a refined beauty in the flowers of many of them, such as P. ardens and P. echinatum, and, as yet, we have only taken in hand the old P. inquinans, zonale, and lateripes, between which a cross has been effected by Mr. Wills. How rarely now do we meet with the old P. tetragonum, or its variegated form? and who has ever seen the simple-leaved Pelargonium, P. lanceolatum? What interesting work it would be for some enthusiast to gather together the nearly 300 Cape Pelargoniums with which we were once acquainted! There was at one time a pure golden-yellow Pelargonium, but it is a question whether it now exists or not; this was named P. luteum.

There was also a P. flavum, with foliage like that of a Carrot. What shades of colour might not be produced with such material with which to work. Imagine a pure yellow Tom Thumb, or a Vesuvius. Many of the Cape Pelargoniums may still be met with, mostly among cottagers, who are fond of such sorts as the Nutmeg, the Parsley (P. crispum), the Mint-scented, and others. I ought, perhaps, to add that Mr. Cannell, of Swanley, has the nucleus of a collection of these interesting plants.

THOS. WILLIAMS.

ASPARAGUS DECUMBENS.

THIS makes an elegant basket plant. Its foliage is light and feathery, assuming a gracefully pendent habit, and, being of a pleasing shade of green, when well grown it is effective either in the conservatory or dwelling house. Its blossoms, though small, are sweet-scented, and when in fruit it is one of



Fruiting Spray of *Asparagus decumbens*.

the most interesting of the class of plants to which it belongs. The plant from which the annexed spray, showing the fruit, was taken was sent to us by Messrs. Vertegans, of Birmingham.

Propagation of Bertolonias.—Mr. Baines (p. 183) omitted to mention that the leaves afford a very ready means of propagation, as they will produce several plants from each leaf, by simply pegging it down flat on the surface of some light soil, and placing it under the same conditions as recommended for cuttings. This mode is, I consider, far preferable to taking off the half-ripened shoots, particularly as they are not produced very plentifully, and there is less risk of spoiling or at least disfiguring a plant, as the lower leaves, which may have become shabby, will answer the purpose as well or better than the newer ones. B. Van Houtteana, guttata superbissima margaritacea, and others, strike most freely in this way.—W.

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"This is an art
Which does mend Nature: change it rather: but
The Art itself is Nature."—*Shakespeare*.

INDOOR FRUIT GROWING FOR MARKET.

FROM Finchley, Potter's Bar, Barnet, and other places in that direction, comes the principal supply of forced fruits to our London markets. The houses in which they are grown are by no means elaborate as regards construction; they are mostly span-roofed, and vary in length from 100 ft. to 300 ft.—strong, light, and airy. They are, as a rule, efficiently ventilated and well supplied with hot-water pipes, the latter being equally distributed about them, thus obviating the necessity of making them so intensely hot—even during cold weather—as to produce bad results from attacks of red spider, a pest dreaded more, perhaps, than any other by the fruit grower.

GRAPE.—These are the most important of indoor fruits, and by many pronounced to be the most profitable. Much, however, as has been before stated in regard to other crops, depends upon having them ready for market just at a time when they are most required. The rapidity with which Grape culture has extended during the last few years is something surprising, and that it is still on the increase is apparent by the number of glass houses that we see almost daily springing up in London and its suburbs. Even at the back of villa residences, where a few yards of ground exist, may frequently be seen numerous small houses devoted to the culture of Grapes, either for market or private use. Our imports of foreign Grapes during the summer, though great, do not appear to affect in any material degree the interests of English cultivators; for, unless imported fruit be of fair quality, its cheapness will by no means guarantee its sale in London markets. From the Channel Islands we receive large consignments of first-class Grapes much earlier in the spring than it would pay English cultivators to produce them; but, after the end of May, by the aid of cheap and improved appliances, and increased knowledge of their business, growers near London who can cut their Grapes and take them forthwith to the salesman, can compete on equal terms even with the Jersey cultivators, notwithstanding that the latter have the advantages of a milder climate and purer atmosphere. I have often been informed by London Grape growers that it is possible to produce fruit of good quality, during the summer and autumn months, at 1s. 6d. or 2s. per lb., with profitable results. But for all this, the enormous profits required (perhaps necessary to meet the heavy losses often sustained) by the retail vendors render it impossible for the public to reap the advantages of cheaply-grown fruit. During the winter months, when Grapes, as a rule, realise the highest prices, if the cultivator obtains for fruit of the highest quality, 6s. or 8s. per lb., he thinks himself well paid, and yet the retail price often reaches from 18s. to 20s., and even 25s. per lb. But at these prices the demand for Grapes is ever on the increase, and growers having a great extent of glass devoted to Vine-culture find no difficulty in disposing of their produce. In one of the most important Grape growing establishments near London there are seventeen large houses entirely devoted to Grape culture, and, collectively, these houses contain no fewer than 650 canes, the majority of which are in excellent fruiting condition. At one time the Vines

here were planted in outside borders, or, if planted inside, their roots were allowed to ramble outside, but now they have nearly all been placed inside, in newly-made borders. The latter are of limited extent, but well drained; they receive liberal top-dressings of good yellow loam yearly, and are copiously supplied with manure water during the season when the Vines are in active growth. Shanking rarely occurs in any of the houses here, and should anything be found to be the matter with the roots, owing to their being inside and almost as comestable as the branches, it can soon be remedied.

In making a new Vine border, just enough soil is provided to plant the Vines in the first year, more being gradually added as required until the whole of the border space is filled. By this method the soil is kept in good tilth for a much longer period than would be the case were the borders wholly made at the commencement. The kinds principally grown are the Black Hamburgh, Gros Colman, Madresfield Court, and Muscat of Alexandria. Late Grapes are looked upon with disfavour, it being thought that the expense incurred in keeping them during winter is greater than the extra money obtained for them. The aim, therefore, is to have all Grapes ripe by the middle of September, and marketed as quickly as possible. The earliest houses are planted with Black Hamburgh and Muscat of Alexandria, the fruit of which is usually ripe by the middle of May. Very early Grapes seldom pay for the fuel needed to produce them, inasmuch as the demand for new Grapes before the beginning of May is comparatively small, and the prices unremunerative. Indeed, it is a singular fact that in some seasons Grapes ripe in April only realise from 10s. to 12s. per lb., whereas a few weeks later they fetch double these prices. This is owing to what is termed the London season not having fairly commenced in April. Madresfield Court is generally fit for sale in August and September, and sometimes earlier, and it is highly appreciated in the market on account of its jet black colour and excellent flavour. I have seen magnificent basketfuls of it exhibited in the Central Avenue, Covent Garden, supplied by Mr. Wilmot, of Isleworth, and they invariably realised higher prices than any other kinds, Muscats excepted. As an early Grape, too, this is found to succeed well, and the examples of it shown in May at some of the London shows have been simply magnificent. Good strong, established canes of average length are generally allowed to carry about twenty bunches each, and, as there are upwards of 400 such canes in the establishment referred to, it will be seen that the quantity of Grapes yearly cut for market is very considerable. In pruning, the Vines in question are not cut in so closely as we often see them done in private gardens, but a good pump bud is always left to each spur, and in some cases pieces of young wood 20 in. in length are left to take the places of spurs that fail to break. No plants of any kind are to be found in Mr. Wilmot's Vineries, except, perhaps, a few Tomatoes and Capsicums in pots, it being perfectly well understood that, in order to grow Grapes well, houses must be entirely devoted to them. Cow manure and soot steeped in water form the principal stimulants used in the Isleworth Graperies.

At a large fruit-producing establishment at Potter's Bar, Grapes are grown to a large extent—a fact which will be understood when it is stated that a supply of excellent Grapes is obtained from April till the following March, or at least nine months out of the twelve. The varieties grown are Black Hamburgh for early fruit, and Gros Colman, Lady Downes, Black Alicante, and Muscat of

Alexandria furnish the mid-season and late supplies. The principal Vinery is a span-roofed one, 200 ft. long and 20 ft. wide. The Vines are planted inside, and the roots are allowed to run both inside and out, but no pretentious border has been provided for them. Their main stems are trained under the roof in the form of arches, and when loaded with fruit present a sight unusually interesting. From this house one year 2000 bunches of ripe Grapes were cut. Vine borders here receive little attention beyond being forked up and manured in spring, the soil being simply that of which the garden consists, which is of a yellow clayey character. In autumn, when the Vines need but little nourishment, the borders outside are planted with Broccoli or similar vegetables that can be removed before spring, when the Vines require to be again started. Heavy mulching and feeding when they are in full fruit, and when they require nourishment most, are the principal points depended upon, it being maintained that, whilst at rest, the ground can be turned to profitable account in the way just named without injury to the Vines. In a span-roofed house, 100 ft. long, planted with late sorts, no border whatever was made in which to plant the Vines; a sunk path was simply cut through the centre of the ground on which the house stands, and the Vines were planted on each side, the main stems being trained up one side and down the other alternately; each of these are allowed to carry twenty bunches, with the form and size of which any Grape grower might well be satisfied. As regards pruning, the spur system is the plan adopted. No more fire-heat than is necessary is used, but in autumn, in order to finish the fruit properly, a brisk heat, with plenty of air, is applied to all Vines on which any fruit is hanging. Grapes are cut for market three times a week; each time all bunches which are perfectly coloured are cut and placed stalks upwards in baskets, which hold about 8 lbs. each.

On some occasions 1 cwt. of ripe Grapes is marketed from this place at one time, these supplies, as has just been stated, being obtained during the greater part of the year. As soon as the Vines have been cleared of fruit the houses are closed for a few days and the syringe vigorously applied to the foliage to clear it of insects, &c., after which as much air as possible is admitted, and the roots receive a thorough soaking with water in order to plump up the buds and retain the foliage in a healthy state as long as possible, for, whilst the fruit is ripening, water is, to a great extent, withheld, in order to improve the flavour and solidity of the berries; the roots, consequently, often get very dry before the crop is cleared, and hence the necessity of a good supply of water afterwards, a point probably too often overlooked by Grape growers. A house planted fifteen months before my visit with small canes of Duke of Buccleuch, and only allotted a border about 2 ft. wide, yielded some sixty-four good bunches of Grapes. The rods were planted closely together and fed with manure water, a system on which it was proposed to grow other Vines. The owner has lately planted a house 150 ft. long with young canes of Black Hamburgh for furnishing an early supply; this house, which is of singular construction, was originally intended for Cucumber culture, but as these did not succeed in it so satisfactorily as could have been wished, it was converted into an early Vinery, a purpose for which it is considered admirably adapted. It is 20 ft. wide, and the roof, which is supported on side walls 3 ft. in height, is flat, 9 ft. fall lengthways in the roof only being allowed to throw off water. The interior arrangements consist of a series of beds, some 10 ft. wide and 15 ft. long, surrounded by low brick walls; between each

of these beds are narrow paths, and also one the whole length of the house, on one side of which is likewise a bed 3 ft. wide, also the length of the house. In the centre of these beds the Vines are planted 3 ft. apart, and trained upwards, and when well established, good results in the way of large crops of Grapes may be reasonably expected. The beds are planted with Melons, chiefly for seed; these, it might be thought, would greatly exhaust the soil, but this is easily counteracted by heavy manuring, mulching, and copious supplies of manure water whilst the Vines are in active growth; when the Melons have been cleared away, during winter this house is filled with bedding plants. In spring it is used for Strawberries, and thus the whole space is kept fully occupied.

C. W. S.

(To be continued.)

FLAVOUR OF STRAWBERRIES UNDER GLASS.

An impression exists that Strawberries ripened under glass are uniformly inferior in flavour to those grown in the open air, but I do not hesitate to affirm that, in two seasons out of every three, Strawberries under glass are better flavoured than those grown in the open ground. In many establishments it is the custom to get ripe Strawberries as early in the season as possible, and when ripened in March, or even in April, almost entirely by means of fire-heat, oftentimes with but little aid from the sun, they are naturally deficient as regards saccharine matter. The greater portion of those, however, who devote a part of their glass to forwarding this fruit are well content if they can obtain Strawberries during the month of May. By that time the power of the sun is fully felt, and it often occurs that more favourable conditions then exist for the perfect development of the saccharine properties of the Strawberry than later in the season when the ripening takes place out-of-doors. Nothing can be more delicious than this fruit when well ripened, and nothing is more insipid when it is coloured—for one can hardly say ripened—under unfavourable circumstances. Being naturally of a watery character it requires a large amount of heat and light to thoroughly solidify and mature it; at the same time it demands a considerable quantity of water during the growing period, which, if withheld, has the effect of diminishing the secretions, and consequently deteriorating the flavour of the berries. The latter conditions may, in the case of outdoor plantations, be supplied at will, but the heat and sunshine are not always realised in our fickle climate; the expectations of a fine crop are often blighted by a period of wintry weather or heavy and continued rains at ripening time. Then, again, we often experience chilling weather when the plants are in full growth and when the fruit is swelling. Anything which tends to weaken the general health of the plant will extend its influence up to and during the ripening time. First-rate fruit can only be obtained from vigorous plants, and our spring weather often fails to induce that luxuriance which is so necessary.

These vicissitudes may all be guarded against under glass, sufficient water can always be administered, whilst excess may be guarded against. Artificial heat judiciously employed will insure a temperature necessary to promote a healthy and active state of the organs of nutrition, in fact, we simply modify and ameliorate our climate, just hitting that happy medium which is the very keystone of success. It may be safely affirmed that few, even of those who make a point of annually consuming a considerable amount of Strawberries have really enjoyed this fruit in perfection. With specially prepared fruit I have often surprised and gratified lovers of the Strawberry, and when, as has often occurred, the only experience of its flavour has been derived from open-air fruit, the surprise has been still greater. Anyone who wishes may easily convince himself of the superiority of fruit grown under glass. Let a portion of the crop be covered when commencing to colour with light sashes, and let them remain day and night until the fruit is coloured. The first fruits will, of course, have lost their gloss and will be rather diminished in weight. But the flavour! That will recompense anyone for the slight loss of weight and the exercise

of patience. I once covered some in this manner, then more for the purpose of preserving them from accidents than anything else, as they were wanted for a particular purpose. The season was very hot, and that year outdoor fruit was good, but that under the glass even better; indeed, they were the richest and most highly flavoured Strawberries I ever tasted. The great heat and drought had eliminated the greater portion of their watery character, so that there was not the suspicion of acidity in them. Thus managed, British Queen and President are superb. If in May pot plants be so placed that the fruit can be kept on them some time after it is coloured, at the same time diminishing the supply of water and giving free air during the day, not even taking it off on mild nights, the result will be a treat to the grower; and if he has hitherto cherished an unfavourable opinion of the merits of house-grown Strawberries, he will be ready to admit his error.

It must be remembered that a Strawberry is no more ripe when first coloured than is a Grape; it requires some days—sometimes, in dull weather, a week—to attain perfection. In the open air this condition is but seldom attained, owing either to the impatience of the grower, or to vermin of some kind attacking them. Unless the season is hot enough to thoroughly warm the soil, the under side seldom ripens, and the only way to ensure perfectly ripened fruit is to prop up each truss on sprays of Birch; sun and air then have full play around them, and they ripen right through. The only objection to this method is that the berries are liable to scald if brought up suddenly from the shade of the foliage and exposed to hot sunshine. Under glass this objection does not hold good, as the fruit seldom burns when brought up as soon as it is fairly swelling. Those who grow for market gather the fruit when most saleable, and that is as soon as it is coloured, and is fresh, plump, and bright. Apart from the fact of wishing to pick as early as possible, the berries are then at their heaviest; leaving them after they are coloured in a hot sun means loss of weight. Whoever grows to gratify their own palate will naturally prefer quality to quantity, and will not mind exercising a little patience to ensure it. One season's trial, whether it be hot or cold, wet or dry, will suffice to convince the most sceptical that highly-flavoured Strawberries may be grown under glass.

Byfleet.

J. CORNHILL.

PRUNING, TRAINING, AND PROTECTING APRICOTS.

THE branches of Apricots should be kept close to the wall. If both natural and artificial spurs be permitted, the latter should never be allowed to become large; they project too far from the wall, and in a bad season scarcely any kind of protection will save the fruit on them. Young wood should be encouraged as much as possible. Where natural rather than artificial spurs are mainly relied on, both blossoms and fruit must be nearer the wall and under the immediate influence of its warm dry surface. In trying to renovate old full-grown trees, the removal of old spurs and the encouragement of young wood should go on gradually side by side; thus no check or disorganisation will take place. New life and vigour will often be infused into old trees by thinning out some of the medium-sized branches, and filling up the space with young wood. This plan need not be resorted to so long as the crop produced is satisfactory; but where Apricots have been an uncertain crop, a change of system will not, under any circumstances, involve much sacrifice, and it may result in a decided success. The great object should be to encourage the production of young wood, and to lay in as much of it as there is space for without crowding. In connection with this, disbudbing in spring should be brought more into a regular system. To lay in more wood without reducing the number of the young shoots by disbudbing the weakly spray would be futile, and would lead to the leaves and branches injuriously shading each other; unripe wood would follow, and the result would be weakly blossoms, which would stand no hardship of wind or weather.

Though a tree should be trained close to the wall to secure full benefit from its warmth, it should not be braced up too tightly. Gumming is often caused by tight ligatures, or by a badly-placed nail injuring the bark. All ties and shreds should

fit loosely, to give space for the branches to swell; no nail should be driven in close to a branch, and no more nails or ties should be used than are necessary to keep the branches safely in position. Where a tree has been well cared for from its youth upwards few nails will, generally, be required, as, when the branches have been properly disposed from the first, the work of training afterwards is very much simplified. The fan system of training is the best for Apricots. When carefully carried out it leads to a better, more regular distribution of the sap; admits easily of any slight alteration of any branches that may be taking the lead during the first years of the tree's formation; and afterwards, should a branch die unexpectedly, the loss can easily be made good. In selecting trees from the nursery care should be taken that the stocks on which they are worked are in a good, sound, healthy state.

As to protection, it is well known that healthy trees, carrying strong, well-matured, fertile blossom buds, will bear more exposure to cold without sustaining injury than those deficient in strength and vigour. Every wall for fruit trees should have a good sound permanent coping of stone, projecting at least from 3 in. to 4 in. from the wall, and it should be grooved underneath, near the edge, to collect the water; it will also be a great advantage if under this groove can be fitted a small sheet iron or zinc gutter to carry off the water and prevent it dripping on the trees. A good projecting coping keeps the wall dry and sound, and trees will thrive much better on a dry, warm wall, than on one that is constantly damp. As regards further protective measures, every season's experience still further convinces me that as good results can be obtained by using simple, inexpensive materials as by the aid of those of a more elaborate and costly character, with the exception of a good glass structure. Light feathery sprays of Yew tree, with the thick ends stuck in under the branches of the tree, projecting from the wall in a downward direction, will afford good shelter from cold winds, and keep off cold rain and sleet. By keeping the light ends of the sprays pointing downwards, the snow and rain will be precipitated to the ground beneath, instead of being conducted to the wall, which will be the case if they have an upward tendency. In windy places an ordifishing net may be drawn over all, to keep the wind from blowing the sprays of Yew from the wall or injuring the blossoms by waving. One advantage of this simple mode of protection is that, as the season advances and more light is required for the swelling fruit, the leaves of the Yew branches shrivel and drop. Where nets of a thicker substance are used, or canvas, or if any other system of covering be adopted that requires removal in the morning and replacing at night, the borders frequently become so trodden in wet weather as to be a serious detriment to the well-being of the trees. Many trees, through injudicious protection in spring, are weakened in health, and rendered more liable to insect attacks. E. H.

FRUIT CULTURE FOR MARKET.

"C. W. S." (p. 199) says that "both for hardy and indoor fruits there is always a ready sale." On the next page, however, it appears that "in a plentiful year hundreds of bushels of good Plums, Apples, and similar fruits, are allowed to rot because the market is so well supplied from abroad that they would not pay for the gathering." This statement implies that our home-grown fruit is inferior to that from abroad, or that foreign fruit of equal quality can be imported at a cheaper rate, or that there is a prejudice in favour of foreign grown fruit, resulting from its superiority or cheapness, better distribution, or some other cause. It is not to be so much regretted if foreign produce of superior quality can be imported cheaper than we can grow it at home, provided the land we have can be put to a more profitable use. The consumers, who are by far the largest class concerned in the matter, are benefited, and the smaller class, the growers, must take care of themselves by growing and finding ways of distribution for better and cheaper fruit in such quantities as to compete successfully with foreign imports, or by devoting their land to a more remunerative industry if it can be found. At any rate, there is no reason why our fruit growers should not adopt means for preserving or canning their surplus fruit in plentiful years, as is now so successfully done in America and France,

In any case "C. W. S." need never fear that many bushels of early Plums will be "allowed to rot," since such varieties as Prince of Wales and Rivers' Early pay well for their culture, notwithstanding the drawbacks which he names. "C. W. S." goes on to say: "Now, if late Plums; to come in after the bulk of the foreign produce is over, were grown there would be a good chance of profit arising from their culture," the fact being that late Plums are now grown far more extensively than the other kind's. Mr. Dancer, of Chiswick, has long known the value of late Plum crops, and his quarters of such sorts as Prince Englbert and Belle de Septembre amongst others are generally well cropped with fine marketable fruit by the ton, while Messrs. Rivers, and the yet more extensive Pershore growers, have long known the value of both early and late fruiting Plums. The inexperienced might be led by "C. W. S.'s" remark to infer that early Plums were a failure generally, and late fruiting kinds not generally grown for market.

Some time ago I made what I thought at the time to be a very moderate, comparative statement, namely, that "in order to fatten a bullock, we require at least the produce of 2 acres of good land for three years, after which, the animal is worth from £20 to £30, while on the same ground we could have grown at least £100 worth of vegetables and fruit." To this "C. W. S." takes exception, since he says "it fails to fairly represent the case." I venture to suggest, however, that he may have failed to read my statement exactly aright, for, had he done so, I feel sure he would have agreed with me, that any cultivator of average merit could certainly obtain more than £100 worth of vegetables and fruit off "2 acres of good land" in three years. How does this statement fail to represent the case? At any rate I am firmly convinced that the result I mentioned can be readily realised, since £17 or even £20 is not uncommon as an annual return for an acre of good land under a vegetable and fruit crop. Potatoes, Onions, and Strawberries would yield such a return under anything like good management. For so short a tenure as three years, to think of planting fruit trees is, of course, quite out of the question, nor are stock-feeding farmers advised by me to attempt fruit culture unless, indeed, they possess the special technical knowledge, which is as essential as capital towards success in this as in other branches of trade. The assumption made by "C. W. S." that the bullock would be fed on "Grass land" is more than I anticipated, since, when I used the comparison, I did not forget that the cheapest and altogether best way of feeding the animal would be to house it and use pulped root crops and cut fodder from arable land, augmented by Linseed or Cotton cake, as is now the practice of the most experienced of large meat-producing farmers.

As to the extension of fruit culture, to which your correspondent alludes, I have only to say that if increased fruit culture in England, together with increased imports from abroad, have failed to lower prices (as is admitted by "C. W. S.") then it is sure evidence that the general demand is ahead of the general supply, and with our present increasing rate of demand, owing to increase in population, neither ten nor fifty large fruit and vegetable growers would influence the markets, if they would only give us fruit and vegetables as cheap and as good or better than those imported from abroad. Our own home growers must balance the imports, or we, as consumers rather than as producers, must be prepared to pay for foreign fruit and vegetables even more liberally than we have hitherto done; and I see that we paid upwards of £10,000,000 last year for imported fruit and vegetables alone. F. W. BURBIDGE.

Pot Vines.—The past winter has proved a rough time for pot Vines that have been, for want of house room, out-of-doors with a mat or two thrown over the pots. Perhaps it may be said that well ripened and established pot Vines could scarcely suffer injury when so exposed; but all depends upon the way in which they have been grown. In any case, harm may be done by exposure, and none are so safe as those which have the shelter of houses, even though in these they may be partly frozen. Forced pot Vines produce large pithy canes that look well, and perhaps tempt the buyer more easily than Vines grown on a more natural system. Such Vines also produce soft fleshy roots that form a mass round the sides of the pots, and when turned out-of-doors in the summer to ripen, rot or decay

in some way, either from cold, exposure, or excess of moisture. Such forced Vines should never be exposed to the open air, but should be placed in cool houses in the autumn to complete their maturity. In some nurseries Vines in pots are not exposed to the open air at any time; they are not even forced except such as is necessary to start the eyes into growth, and they are finally finished off in low span-roofed houses, in which a gentle heat can be used if needed. Such Vines are remarkably short jointed, the wood hard and wiry, and the pots are full of hard, fibrous roots. These are Vines that any one may plant or fruit with the greatest certainty that they will do well.—A. D.

THE FLOWER GARDEN.

FLOWER-BED ARRANGEMENT.

THE first thing which "Azucena" (p. 211) should do is to improve the soil in the bed, and if, as he says, it is wet and cold, some drainage should be put in the bottom. This will be safest done by throwing the best soil from the top on one side; then take the bad soil from the bottom away altogether, to the depth of 3 ft. if possible; 6 in. of stones or any kind of rubble may now be placed in the bottom, on which place a layer of turf with the Grassy side downwards, to keep the drainage clear. On this make the bed, and have the soil made as good as possible by mixing some old manure with it; turfy loam, with some old charcoal, vegetable refuse, or leaf-mould will do. There are many ways of effectively planting such a bed, but round-headed plants, such as Aralias, do not associate well with sedge-like plants, such as the New Zealand Flax, unless they stand well above them, so as to show their outlines clearly and distinctly. If any system of carpeting be adopted, the permanent occupants should be far enough apart to permit of the undergrowth being seen through the foliage of the others. Allow me to offer the following, as suggestions based upon what I have myself tried and seen done elsewhere:

ARRANGEMENT No. 1.—*Dracena indivisa* in the centre, one New Zealand Flax at each end, and four Yuccas on the flanks, i.e., two on each side, with one plant of *Bacconia cordata* between the *Dracena* and Flax at each end. The *Bacconias* will be an immense improvement in summer. Many other hardy plants may be used in a similar manner, notably some of the *Delphiniums* and *Phloxes*. The *Dracenas* and *Flaxes* will need protection during severe winters. Last winter—i.e., the winter of 1877-8—no protection was required. This year they have had their leaves drawn up together and secured in a cone-shaped mass with matting; then they had a single mat wound round them and, thus secured, with some straw placed round the stems and over the earth at the base, large plants of them have kept safely here.

No. 2.—*Chamærops* excelsa in the centre, with half-a-dozen small Aralias grouped round it. Two or three Lilies might with advantage be introduced, such as *Lilium auratum*, *lancifolium*, or *candidum*.

No. 3.—Two plants of *Ailanthus glandulosa* 2 ft. on each side of the centre, longitudinally, with six dwarf plants of *Acer Negundo* variegatum planted round. The *Ailanthus* should be trained to a single stem some 4 ft. high, and should be pruned well back every spring, just before the buds push. The largest shoots of the Aralias will require a little shortening. This will make a handsome bed in summer when the groundwork is filled in with bright colours; but the plants are deciduous, and this, so far as regards winter effect, will be a drawback.

No. 4.—New Zealand Flax in the centre, and half-a-dozen Yuccas round, with about four small plants of *Tamarix* worked in, so as to effectively balance the whole. The *Tamarix* must be pruned close back every spring.

No. 5.—*Acacia inermis* (standard) in the centre, with half-a-dozen Aralias round it, and a couple of plants of *Bambusa Metake*, one on each side the central plant.

No. 6.—*Rose Gloire de Dijon* in the centre not too rigidly trained, with a plant of *Clematis Star of India* planted near it, so as to grow up and mingle with the Rose, with half-a-dozen plants of New Zealand Flax, or any others of light, elegant habit planted round.

There are numberless arrangements that might be added in a similar way, all of which would look well in suitable situations. For instance, a good-sized Pampas Grass in the centre, and the remainder of the bed planted with dwarf plants to set the Pampas Grass off to the best advantage, would be a simple and effective arrangement. I cannot help thinking that hardy plants that will require no protection in winter would be the most satisfactory. I know of a similar bed, only larger in size, planted with Yuccas, among which are placed thinly *Bacconia cordata*, and the effect is always pleasing. The ground is carpeted with *Cerastium tomentosum*, but there are numberless dwarf hardy plants that would be suitable for forming the groundwork. A good-sized, pyramidal, variegated Holly would form

a good centre for a bed of hardy plants, or a standard *Rhododendron* with four dwarf, standard, grafted plants of *Cotoneaster microphylla* planted one at each end, and one at each flank, with a variegated *Launymus* between each two *Cotoneasters*. In short, your correspondent is more likely to be embarrassed by the multitude of plants at his disposal than by a scarcity. The first and most important matter is to provide a good bed of soil.

E. HORDAY.

THE INDOOR GARDEN.

NATIVE MOSSES AND JUNGERMANNIAS, UNDER CULTIVATION.

WHILE the various kinds of *Lycopods* and *Selaginellas* are much run upon for carpeting purposes in stoves and conservatories, the capabilities of our own Mosses and Jungermannias for ornamentation are, I think, unfairly overlooked—a circumstance somewhat strange, as they receive a full measure of admiration in their native woods. Let me describe an arrangement of Mosses and Ferns, which has been in my little stove for the last two years, and which has attracted universal admiration. My gardener brought home one day a quantity of the larger and more beautiful Mosses from a neighbouring glen, and was so struck with their beauty that he determined to try to cultivate them. He arranged them on pieces of old board about 30 in. by 24 in., fastening them down with fine copper wire, which went through rather than over the Moss, and thus was hidden from view. Into this cushion were dibbled bits of small growing Fern, such as *Adiantum glaucophyllum*, *A. Capillus-Veneris*, *Davallia dissecta*, &c. The whole was then placed in an intermediate stove, with one edge dipping into a huge pot which was kept full of water, and which was itself smothered outside with *Adiantums*, having been used as a water pot for many years in a large Orchid house belonging to the late Mr. Bowley, of Blackrock, county Dublin, from whose possession it passed into mine. The Mosses were thus kept constantly moist by capillary attraction, and soon commenced to grow vigorously, as did the Ferns, notwithstanding there was no soil whatever on the board. When all was proceeding favourably the affair was taken down from the water pot and kept frequently syringed, and it has continued ever since to be a mass of exquisite verdure. From time to time various other small plants were inserted, and all have grown with great luxuriance and seem perfectly happy. Amongst the plants on my board may be noted the following, and I am by no

means sure that I have exhausted the list:—Of Mosses, the chief is *Hypnum* (*Thamnium*) *alpestrum*, one of the most beautiful, as well as one of the easiest Mosses to cultivate. Mixed with this are *Bryum* (*Mnium*) *undulatum*, *Hookeria lucens*, *Polytrichum commune*, *P. undulatum*, and *Jungermannia aplenoides*. Of Ferns, *Adiantum Capillus-Veneris*, *A. glaucophyllum*, *A. setulosum*, *A. pubescens*, *Davallia novæ-Zelandiæ*, *D. dissecta*, *Gymnogramma ochracea*, *Pteris cretica*, *Oncyrium lucidum*, *Selaginella Martensis*, and *S. M. variegata*. Of miscellaneous plants, there are *Campanula hederacea*, *Pinguicula grandiflora*, *Anagallis tenella*, *Stellaria media*, *Arundinaria falcata* (seedling), *Torenia asiatica* (the only plants which have survived the winter are those in the Moss), and a small *Hypericum*. Recently I have inserted sundry small Orchids, such as *Dendrobium japonicum*, *D. nobile*, *Odontoglossum Alexandræ*, *Acropera Loddigesii*, &c. They look healthy, but have not been there long enough to speak positively about them yet.

While speaking of Mosses I may mention a very pretty *Selaginella* called, I believe, *helvetica*, which grows abundantly on moist banks in the region of the Tête Noire, and doubtless elsewhere in Switzerland and Savoy. Plants brought thence last summer and wintered in a cold frame are now in good

Snowdrops.—*Galanthus Imperatri*, which is just now in full beauty here, having this season come into bloom somewhat later than *G. nivalis*, is undoubtedly the finest Snowdrop at present in cultivation, some of its blooms measuring more than 1 in. in length. *Galanthus Elwesi*, a rare and beautiful species from Asia Minor, is also now in bloom; it is totally distinct in appearance from all other Snowdrops, and can be at once distinguished by its dwarf habit of growth and by the green blotch at the base of each of the minor petals, which, when the flowers are fully expanded, is very conspicuous. Both the single and double varieties of the common Snowdrop (*G. nivalis*) are unusually fine this year, and although they have been in bloom for nearly five weeks past, the flowers are still in good condition. *G. plicatus* is only now showing its broad leaves above the surface of the ground, and will continue the succession of Snowdrops into April.—HUGO HARPUR CREWE, Calke Abbey, Derby.

Yuccas in the Isle of Wight.—I planted the *Yucca* of which the annexed is a representation about twelve or thirteen years ago, and it has taken well to this place. The climate of the Isle of Wight is evidently very favourable to this tribe of plants, which all flourish here amazingly. The flower-spikes come all from a single stem, and they last in blossom deep into the autumn—sometimes nearly to Christmas. The *Yucca* in question is 8 ft. 3 in. high at the highest point, and its circumference is 24 ft. 6 in. On a lawn it forms a splendid object, and when two or three of them are planted together the effect is soon very striking. There are some other species grown here besides *Y. gloriosa*, but I think this is the best of them.—MARCUS LOWTHER, CAPTAIN R.N., Thornton, near Ryde.



Yucca gloriosa in the Isle of Wight.

Abnormal May Apples (Podophyllum).—Last August, when rambling through the woods a few miles from this city (Dayton), on a sort of botanical tour, I found a small group of *Podophyllum* in fruit. Upon examination I found several abnormal specimens in twos, threes, and fours, and one fine bunch of seven, which I had photographed. Can any of your readers explain the cause or causes of such irregularities? I may add that the plants themselves were, to all outward appearances, normal, and gave no indications why they should produce such monstrosities.—AN AMERICAN.

Oil heating.—Several of your correspondents having lately expressed their opinion that oil stoves are useless for warming greenhouses, &c., I think it right to relate my experience, which certainly does not coincide with theirs. Just before last Christmas the little boiler which has hitherto supplied the heat to my small house completely broke down, and, finding it impossible to get it promptly repaired, I was obliged, in despair, to look round for some temporary means to keep out the very severe frost that then prevailed. I ultimately purchased, for 35s., a petroleum stove, fitted with two 3-in. burners, supplied from a tank holding about one quart of oil. From that time to this the temperature in my greenhouse has not been below 42°. The lamp burns for twelve hours without attention, and actually gives off no smoke, but I admit that there is a slightly disagreeable smell. My plants, which are of a miscellaneous kind, look healthy, and, as far as I can judge, have not suffered in the least; therefore, I intend that the oil stove has served me well, and I shall not be persuaded hastily to discard it.—W. M.

health. In form it resembles *S. apoda*, but it is trailing in habit, not cushion-like, as in the case of *S. apoda*. I do not see it in either Ware's catalogue or Backhouse's.

GREENWOOD PINE, M.A., F.L.S.

Monkstown, Co. Dublin.

THE CULTURE OF PANSIES IN POTS.

I WISH amateur gardeners—those who have a great love for a few specialties—could be induced to take up the culture of Pansies in pots, and grow and bloom their plants in a cold frame in early spring. In this way the rich colours and markings of the yellow ground, the white ground, and the self Pansies are seen to the best advantage in the cool, bright spring weather. The flowers are large, stout, and of fine shape, the colours rich, and the belting surrounding the ground regular, and of that glossy richness of surface and texture peculiar to the Pansy. Twenty-five years ago I had something to do with growing them in this way, but that was the day of Pansy societies, and when prizes were offered at the London shows for Pansies in pots. It is a fact that the encouragement given to certain plants, by reason of the places assigned them in prize schedules, has much to do in the direction of encouraging their culture; but I would have Pansies grown in pots for the sake of the pleasure they afford, and, when successfully grown, the great reward they bring to the cultivator. It is not too late to set about the culture of Pansies in pots, provided some good young plants, struck from cuttings taken in July or August last, could be had well established in small pots. In the days I have referred to it was customary with the Pansy growers to pot up a good portion of their plants in small pots, and winter them in cold frames, and good plants could be had all through the winter. It would not be difficult to obtain such plants now, especially from the Scotch florists, but they are not so common in the south of England as they used to be. Pansies for cultivation in pots should be grown from cuttings and not from divided parts of the plants. Healthy, well-rooted cuttings make vigorous, stocky plants. It is best to begin in October or by the beginning of November potting the plants into 5-in. pots, as this gives them a good start and enables them to get well established. The plants can be safely wintered in a cold frame having a dry bottom, as damp is the greatest enemy to the plants during the dead season of the year. All the water necessary during winter is just sufficient to keep the plants alive, and air should be given on all favourable occasions. If sharp frost sets in some covering ought to be placed over the frame while it lasts.

The next stage is that of shifting into the blooming pots; this should be done about the end of February or early in March, selecting the size of the pots to suit the character of the plants; the largest can go into 8-in. pots, the smallest into 6-in. or 7-in. pots. This done, the plants should be encouraged in every way to make a free, stocky growth, taking care not to keep them too close and so imparting to them a drawn appearance. A cold frame, with the plants resting on a well-drained bed, is the best convenience for the plants; the spot should be cool and somewhat moist, and if shaded by trees during the middle portion of the day so much the better. Under such circumstances, and with due attention, the Pansies can hardly fail to do well. Years ago growers in pots for show purposes used to stimulate their plants freely by giving them strong doses of liquid manure. Modern growers have modified this course of treatment, finding they lost plants through overfeeding. Just as the flowers are expanding some weak manure water can be given once in the morning, but having the plants raised on inverted flower pots, so that a quick drainage can be secured. A good compost for Pansies is made up of one-half good fibry loam, one-third old rotted cow manure and horse droppings that crumble almost to powder, and the remainder well-sweetened and thoroughly-decomposed leaf-mould. Liquid manure has been referred to, and to have this handy for use, two tanks, or a tank in two divisions is required. In one division should be put some fresh sheep and cow manure, and a little pigeon's manure if it can be got, and on this water should be poured, and the whole well stirred up together; then it should be allowed to subside until the surface-water is clear, and the clear liquid drawn off

into the other division and used, diluting it as may be thought best. Liquid manure should not be used very strong for Pansies in pots.

Those who make a point of growing flowers in pots, are always careful to keep up a supply of good plants from cuttings. The first batch of cuttings are taken in June, and when the plants from which the cuttings have been taken have done flowering, they are cut down to the ground, leaving any young growths that may be coming up from the roots. They are then top-dressed, and set out-of-doors in a shady place, and finally turned out into the open ground in August, and planted into a prepared bed under a north wall or hedge. The soil for such a bed can be got from the siftings of the refuse soil from the potting-bench, and the plants mulched with a little spent manure from a mushroom bed, to keep the surface cool and moist.

It is scarcely necessary to give a list of varieties. Any florist would be able to recommend and supply a suitable selection; only let the cultivator take care, as far as he can, that they are strong, healthy, and well-wooded plants, and, as such, worthy of his care and attention. D.

OSMUNDA PALUSTRIS.

LIKE the Brake, the Fern-Royal has a very wide range of distribution, and consequently presents a great variety of forms, some of which climate and other conditions have so much differentiated that, taken by themselves, they would be regarded as distinct species. The Fern Royal is distributed all over Europe and Asia, (excepting the Arctic regions), Tropical and South Africa, and the Mascarene Islands, and in America from Canada to Uruguay. *O. regalis* var. *palustris* is an American variety occurring in Central America and Brazil, and one of the prettiest of the genus. The accompanying engraving gives a good idea of the beauty of this Fern, reduced to about one-sixth of its natural size. It has alternately been regarded by different writers as a species and variety, and, like too many other Ferns, has received a number of different names. Milde enumerates the following in his elaborate monograph of the genus: *O. palustris*, Schroeder; *O. spectabilis* var. *brasiliensis*, Greville and Hooker; *O. spectabilis*, Martins and Galeotti; *O. mexicana*, Fée; *O. spectabilis* var. *palustris*, Presl; and *O. pulcherrima*, Pohl. The pinnales are finely and elegantly toothed, a character which could not be shown in this very much reduced representation of the plant. I know nothing of the history of its introduction, but it comes nearest to the *O. gracilis*, figured in Lowe's "Ferns, British and Exotic," viii., t. 4. It is well grown in Mr. Williams' nursery at Holloway, whence our illustration was obtained. W. B. HEMSLEY.

CROTONS FOR TABLE DECORATION.

AMONG ornamental foliaged plants suitable for decorative purposes none are more beautiful or useful than Crotons, some of the newer varieties of which have not only magnificently coloured leaves, but are also very remarkable as regards shape. One of the most peculiar in this respect is *C. interruptum*, with which Nature has played some strange freaks by forming gaps in the leaf-blade, and these occur regularly on each side, leaving only the midrib for a distance varying from 1 in. to 2 in., when it again assumes the ordinary character for a short space till there is another break, and so on, which, together with the rich veining, renders the plant very interesting. There is another curious kind named *spirale*, which has leaves about 1 ft. long, with a regular spiral twist from top to bottom, and, as these are narrow and beautifully coloured, it is particularly adapted for use on dinner tables, as are also many of the others. One of my special favourites for this purpose is *C. Wiesmanni*, which has long, narrow foliage of a pleasing green shade, veined regularly throughout with bright golden-yellow, the effect of which, seen under artificial light, is greatly heightened and intensified. A pair of this and a well-coloured *Dracaena Cooperi* for the centre, or *vice versa*, is simply perfection, as, being somewhat of the same type and habit of growth, they associate well together. Another fine variety for a similar purpose is *C. angustifolium*, which has long,

narrow leaves that droop in a very graceful manner, and these, as soon as they attain a little age, become brilliantly tinted, the midrib being of a bright glowing crimson. When required for table decoration, the best way is to start with young plants and grow them on with single stems clothed with foliage right

fibry peat and sand, and grown in the warmest part of the stove, keeping them well up to the glass, in order that they may have the full benefit of the sun, as without that they do not assume the rich leaf markings for which they are so highly prized.



Osmunda palustris.

down to the pots, an easy matter to accomplish, if the points of any strong shoots be taken off and struck, which may be done by inserting them in sharp, sandy soil in single pots, and placing them where they can get a strong, moist heat. As soon as they are struck, they should be shifted on into rough,

Beautiful, however, as are the above-named *Crotons*, and many others that have been in commerce for a long time, they are likely to be eclipsed by several of more recent introduction, as, on going through one of the London nurseries some time ago, I was much struck with the appearance of one

called Lord Derby, and, although many of the plants were only small ones, they were conspicuous among a whole houseful of others for the striking colour of their foliage, which, in most kinds, does not become at all marked till they attain some considerable size. If this should turn out to be a good grower, as its appearance would lead one to suppose, it will be much sought after for exhibition purposes. Although not at all equal to it in point of colouring, *C. Disraeli* resembles it in form, but those who are so fortunate as to have the first can well dispense with the latter. *C. Mortii* is a very desirable kind to grow in a collection; the ground colour of its leaves is a deep glossy green and the midribs yellow, with the same shade running on into the leaf blades, where it again forms a margin around their edges.

The only drawback to Crotons for general use is that they are very tender, but, for all that, with a little management they may be made available for the embellishment of conservatories during the greater part of the summer. All that is necessary is to place them in the warmest part of the house, where draughts or cold air does not play immediately on them, and, when so situated, if kept tolerably dry at the roots, they will stand until quite late in the autumn without showing the least signs of distress. There is one thing that should be borne in mind, however, and that is, that the transition from the close, confined heat of a stove to that of a cooler house must be gradual if their safety is to be insured, as, with this class of plants, it is sudden changes that work the mischief, by causing them to flag and lose their tender young roots, which get a chill, and, once these are gone, nothing but a brisk temperature will restore them or save the plants from perishing outright.

The habit of most of the large-leaved Crotons is naturally bushy, but in order to make it more dense and compact, the points of all the leading shoots should be nipped out about this time, or the branches should be cut back where the specimens are already large enough, and the pruning to which they are thus subjected will cause them to break again, and to become refurnished with fresh young foliage. When the young growth of such as are pruned back is about half-an-inch long, the plants should be partially shaken out and repotted, but being subjects of a rather moisture-loving nature, it is important that they should have free drainage, for, although in the height of the growing season they cannot well have too much water, their health is injuriously affected unless it can pass freely off. In potting, about equal parts of peat and loam, with a little sand, will be found to answer best, and this soil should be used rather rough and lumpy, but pressed in tolerably firm, and after a day or two watered with tepid water to settle it about the roots. No more should then be given till it gets tolerably dry again, after which, as growth progresses, they will gradually require more. Stiff formal training with Crotons, and indeed with all other plants, should be avoided, as it spoils their beauty; in short, beyond a little adjustment, partaking something of the pyramidal form, the less staking and tying they have the better they look. A few sticks hidden among the foliage may be used to secure the main branches to, so as to bring the frame into shape, after which the regularity of the growth will do the rest.

A good plan to get Crotons well up in colour, is to grow them in houses among other plants that do not require shade, and in order that the tops may be brought up close to the glass, they should be set on inverted pots so as to be above their associates. Thus situated, they get the benefit of a full play of light. To prevent the attacks of red spider and thrips, pests to which they are rather subject, heavy syringings should be given every morning and afternoon during bright days, but should either of these pests effect a footing, hand washing must at once be resorted to, or they soon do irreparable damage. A good soft sponge and soap and water carefully used will soon clean the foliage, and even if there are no insects, the plants quite pay for the labour and time thus bestowed on them by their improved appearance. S. D.

Cœlogyne cristata.—This, in my opinion, is one of the finest of all winter-blooming Orchids, and, what is of equal importance, it is very easily cultivated. We have a small plant of it in a 5-in. pot

bearing at present three spikes of bloom. It has been grown on the back shelf of a Pine stove, where it seems to thrive satisfactorily. On the same shelf a plant of *Lycaste Skinneri* has produced, amongst others, one of the largest blooms I ever saw on any plant of that species. I may just remark, acent growing many plants in the same house, that on the same shelves with the Orchids there are four dozen Black Prince Strawberry plants in 6-in. pots; with from thirty to fifty fruit formed on each plant.—CAMBRIAN.

CULTURE OF *MONSTERA DELICIOSA*.

The structure described by "E. G. L." (p. 190) will suit the *Monstera* very well. The elements of success in the culture of this tropical fruit are heat, light, and moisture, and, provided these necessary conditions be one and all supplied, success will be ensured. Any form of training may be adopted which will bring the plant well up towards the glass. It may be made to cover a portion or the whole of the back wall trellis, or, what is preferable, it may be trained round forked tree stumps, a system which suits it admirably. It may be grown in a tub, but I should prefer planting it out in a good body of fibrous peat and loam in equal proportions, which should rest upon a good drainage of brick rubble. Thus placed, unlimited supplies of water may be given in hot weather, and the fruit will be fine in quality and abundant. One of the best fruited specimens of it which I ever saw was at Cologne; it enjoyed an extensive root-run, and many of the main feeders found their way into a miniature lake; the stems were trained to tree branches, and the fruit was plentiful and good. Although the *Monstera* will thrive in a low temperature, it will not develop its true character as a fruit-bearing plant, unless a brisk growing heat be maintained during the spring and early summer months. If "E. G. L." intends to devote the whole space of his house to the *Monstera*, there will be but little difficulty in growing it to perfection; but if other plants are to be grown along with it, they should not be permitted to crowd it, or in any way obstruct the light from it, and only just enough shade should be given to prevent scorching. J. CORNHILL.

Byfleet.

LAPAGERIAS BEST FROM LAYERS.

IN "Gardening for the Week" (p. 163) incidental reference is made to the slow growth of the *Lapageria*, the writer observing that both the red and white *Lapagerias*, when raised from cuttings or layers, are "very slow growers, and must not be over-potted." This is true with regard to cuttings. They take months to strike, and make slow progress afterwards, but not so with layers, which grow fast when well managed. We have a young plant here which originated from a layer put down in November, 1877, and by October following, or eleven months afterwards, it had one strong shoot 8 ft. long, one 5 ft., one 3 ft., and one or two lesser ones. I bought the plant of Messrs. Fisher, Holmes, & Co., of Sheffield, who had at about the same period several hundreds of the same age, with shoots ranging from 3 ft. to 9 ft. in length, and producing abundance of flowers. This was the white variety. These plants had no leading shoots to begin with, but were produced from the leaf-bud, the shoots being layered their whole length with only a portion of each leaf peeping above the soil. The firm in question has been producing stock in this way for years, a house 50 ft. long being set apart for the purpose. The largest plants are at once transferred to 9-in. and 10-in. pots, which were well filled with roots the same season. The success attending the raising of plants in this way has suggested the idea that the best way to grow the *Lapageria* profitably for decorative purposes, would be to raise plants annually like pot Vines. I reckoned that the aggregate length of flowering shoots produced by layers from two or three old plants would be 1500 ft. at least, reckoning the number of plants at 300, their average length at 5 ft., and only allowing one shoot to a plant; but 2000 ft. would be nearer the mark, for many of the plants had from 12 ft. to 18 ft. of wood upon them. During last autumn the whole of one side of the roof of the house was a sheet of white *Lapageria* flowers, from plants under a year old. The multiplication of wood is easily explained. The shoots, when trained on to the roof in the usual way, do not break freely at the buds, but lengthen at their extremities principally, but when they are buried in the soil they produce long shoots from each bud, and also begin to put out suckers at an early stage. Pure peat and sand, plenty of drainage, and plenty of water at the roots, are considered to be the essentials as regards the successful culture of this climbing plant. J. SIMPSON.

Forcing the Laurustinus.—Instances may often be found in which the principal members belonging to plants cultivated in this

country remain undiscovered for years. The Laurustinus has long been employed to ornament our pleasure grounds, but we are only just awakening to the fact that it makes a pretty pot plant, and may be forced into bloom at a very early period of the year. Those who have so treated it this season will have been enabled to fully appreciate its merits. It is useful either as a small compact plant for general decorative purposes, or large specimens may be grown in tubs, to be introduced as required into the stove or forcing houses—and they by no means require the lightest and best part of the structure—where they will yield, from Christmas onwards, an abundance of flowers for cutting. Anyone who has a warm house may utilise the Laurustinus to great advantage, as the plants may be placed in a light shed or cold frame, from whence they may be introduced into heat. Where there are corridors and draughty places to decorate, these forced plants will be found as useful as any plant in cultivation, inasmuch as they last so long in flower, and do not show any signs of suffering when exposed to vicissitudes of temperature. It would be well if everyone made a point of keeping a stock of Laurustinus in pots, as, apart from the enjoyment to be derived from them early in the year, they serve to guarantee us against exceptionally severe winters. We from time to time experience a season which cuts off a great portion of the outdoor plants, and our gardens are denuded of this pretty shrub. By propagating every year, there would always be some good-sized specimens available for replacing those destroyed.—BYFLEET.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Treatment of Cyclamens after Flowering.—"Brookhurst" recommends (p. 176) that old Cyclamen bulbs should be placed in the full sun when removed from the conservatory. I have practised this system but I abandoned it, as I found that bulbs thus treated never flowered so well as those which had received protection. It hardly seems fair treatment to expose a plant, which during the spring has received the shelter of a glass roof, and which has probably been even screened from the hot sun, to the vicissitudes of an English summer. Even such hardy shrubs as the Lilac and Dentzia would be much injured, if on removal from the greenhouse they were all at once exposed to the full force of the sun and wind. As an experiment I once placed some Cyclamen bulbs where they did not get any sun the whole summer through, and many of them had nearly 200 blooms on them. I am aware that in its native habitat the Cyclamen grows in the full sun, but the fact of its thriving naturally under sunshine, does not warrant us in subjecting it when in cultivation to great extremes.—J. CORNHILL.

—Having always paid great attention to Cyclamens after they had done blooming, I read with much interest the paragraph which appeared in THE GARDEN (p. 164) on the subject. I am delighted to see prominence given to what is so important to these lovely flowers, viz., the great care necessary during their state of rest, a fact forgotten by almost all amateur Cyclamen growers. There is one question, however, which I should like to ask your correspondent, and that is about the two removals mentioned (p. 164). The Cyclamen is always impatient of removal, but in pot culture one shift is absolutely necessary on account of changing the soil. There are, too, at all times of its growth so many fine, delicate rootlets, which would, under the system of first planting out and then repotting, run a double risk of injury. Would it not be better to move them in July into larger pots and then let them bloom without further check? My plan has always been the same as that which your correspondent recommends up to July, when I take them carefully out of their pots, shake the earth from them, and wash them in tepid water, cutting away any dead roots which I can find. I then pot them and keep them warm for a few days till the roots become established, and then plunge the pots in ashes in a sheltered part of the garden, having them always watered and syringed till the nights become frosty, when they have the protection of a cold frame till they come into bloom. My Cyclamens have been beautiful, some bearing from sixty to seventy blooms, well thrown up above the leaves. I may add that the main thing in the culture of these flowers is, first, to procure and sow the seed in June, when it is fresh from the old plant, to keep the plants well drained and the leaves well syringed, and, last and most important, is the care and culture after flowering.—STAR.

Propagating Bertolonias.—I am well aware that these plants may be increased by means of leaves in the way mentioned by "W." (p. 212), a plan well worth following in the case of those who grow Bertolonias in quantity for sale, but for private places I prefer shoot cuttings, as, with them, one gets a plant up in a condition to show its character in much less time, and taking off the tops helps the plants to break back, and better furnished specimens are the result.—T. BAINES.

ROSES.

CULTURE IN POTS AND IN BORDERS.

CULTURE IN POTS FOR MARKET.—Large quantities of dwarf Roses are grown in pots for the Paris market. These Rose trees come from the district of Le Brie like those which are intended for forcing. They arrive in Paris about the month of November, and are at once laid by the heels in the beds prepared for them. They are potted in the open air during the fine days of autumn, or in winter under a shed. The pots used are 6 in. in diameter, and are filled with a compost consisting of one-third of rotten night soil, one-third of light earth, and one-third of garden soil. The pot, which must be well drained, is filled to a third of its height, and the Rose tree is placed in the middle. The plant is held in the left hand, and the pot is filled up with the right, sprinkling the soil between the roots, and pressing it down from time to time. The Rose tree ought to be so firmly fixed in the pot that it can be lifted up, pot and all, without the latter separating from the ball. The potted Rose trees are then laid in by the heels, the pots being laid upon their sides, and allowed to remain in that position during the winter. In February or March they are planted in borders in four rows, at a distance of 16 in. from each other, in every direction. This method of culture adapts the plants first for the market, and, finally, for being grown in rooms. As there is a large demand for Roses about midsummer, the festival of St. John, and on the occasion of the feast of the Assumption in the middle of August, it is very important that the Rose grower should be well provided with Roses in full flower at these two periods. To effect this it is necessary to reserve several borders specially for plants which must not be pruned, so that the whole of the sap may produce plenty of wood, and a moderate number of flowers at the extremity of the branches. About six weeks before the time when they are required they are pruned, at least two-thirds of the most vigorous branches being cut off, the weakest branches being cut back to the stem. The sap then fills the lowest eyes, which have hitherto remained dormant, causing them to develop themselves fully. The growth of the plants is watched until the new buds begin to form, which generally takes place about the twentieth or twenty-fifth day. Vegetation is then encouraged by copious waterings, giving one watering-potful to every four plants. If the plants are growing too fast they must be checked by giving them a smaller quantity of water, or else by shading them from the light, or, better still, by transferring them to a cold house. By this means the Rose grower can be ready for the market by a particular day, with a well grown stock of plants, which will bring him in from 1s. 3d. to 1s. 8d. each. We have already stated that it is the Rose du Roi and the Aimée Vibert which are best fitted for pot culture. Bengal Roses may also be grown in pots from 5 in. to 6 in. diameter, which are sold from 4d. to 6d. each, while the little Lawrence Pompons may be grown in pots of from 2½ in. to 3½ in. diameter. These beautiful little plants are specially fitted for stands and *jardinières* in small rooms.

BURGUNDY ROSE POMPONS.—The Burgundy Rose Pompons, which belong to the Cabbage Rose class, have produced a dozen varieties, those most usually cultivated being the Rose de Mai and Pompon du Roi, with purple flowers, the latter being the most dwarf of all. The Burgundy Pompon, which is a true miniature edition of the Cabbage Rose, was found in 1735 on a hill in the neighbourhood of Dijon, where it was growing spontaneously; hence its name. In some localities it is called the Pompon de Mai, on account of its coming into its fullest perfection in that month. The buds of this beautiful variety are specially fitted for head-dresses and bouquets for balls. They take the place of winter flowers when they begin to become scarce, and when made into beautiful bouquets with Violets, form fresh, bright, and elegant head-dresses. The Pompon Rose is grown in borders, beds, and clumps. It is very easily cultivated, as every soil seems to suit it; it is, however, best adapted to light soils, in which it blooms much earlier and more abundantly. These two varieties of Roses are propagated by the suckers which they throw up. Every year the roots are earthed up, so as to cause the new shoots to throw out roots, which are separated in the autumn. The

Pompon Rose, when grafted on the Brier, does not seem to thrive, but when cleft-grafted or budded on the Cabbage Rose it seems to prosper. It forms a Rose tree with a full head, and lives a long time without being injured by the frost. In this form it ought to be trimmed down to about $6\frac{1}{2}$ in., a single branch of last year's pruning being preserved. We must also be careful to cut away all the weak shoots which interfere with the form of the head.

DWARF ROSES FOR GROWING IN BORDERS.—Dwarf Roses may be conveniently used in the formation of borders, as well as in beds and round baskets, or on the edges of clumps. Such borders are remarkable, not only for the abundance of flowers with which they are covered during the whole season, but also for the variety of colours which may be obtained by grouping different kinds together, as well as for the ease with which this sort of Rose is cultivated. All that is necessary is to prune the trees so as to induce them if possible to throw out new shoots from their base which will cover the whole of the soil beneath them. To make a Rose border, several parallel or concentric lines are planted, according to the shape of the bed. The Roses are about 4 in. from each other on each row, the rows being 8 in. apart. Less than three lines should not be planted if we wish to obtain a happy effect; we can, however, increase that number, according to the result we desire to obtain. By graduating the height of the plants from the first row to the last, so that they gradually increase in size, or else so that they increase as far as the middle of the bed, and then decrease to the other side, we obtain a bed of single or double slope as we please. The first form is most suitable for the borders of shrubberies, the second for open beds or baskets. We give below the names of those varieties which are most suitable for growing in borders. They must be planted according to their height, the smallest in front: 1. Laurence's Glory, very small flower, crimson-purple; 2. White Pompon; 3. Pompon bijou, light pink; 4. Fumila, a variety of the Noisette, white; 5. Double multiflora, globular flowers, pink; 6. La Désirée, bright pink; 7. De Chartres, half double, delicate pink.

J. LACHAUME.

Rose Niphetos.—Canon Hole condemns this Rose, but he qualifies his condemnation by frankly owning that its buds are grown by thousands for the London market to be made up as button-holes, or inserted in the best bouquets. Nor can we honor it more than by using it for the latter purpose. Catherine Mermet, a large, fleshy Rose, I cannot think superb; it lacks the modesty of Niphetos, and Marie Baumann is quite out of the competition, owing to its brilliancy of colour and robustness of habit. As to making Niphetos in paper, the flowers are not to blame; moreover, it is only the most beautiful that are chosen for imitation. Niphetos has but one fault, at least, to my prejudiced eyes, viz., its fragile wood often rendering the blooms invisible without raising them. This renders the plant more suitable for a cool greenhouse than for outdoor growth.—EUGENE E. P. LEGGE, *Litton Cheney, Dorset.*

Souvenir de la Malmaison Rose.—Mr. D. T. Fish inquires (p. 10) why this Rose is malformed early in the year, and improves as the season advances, and asks whether the improvement can be the consequence of an excess of vital force early in the year. I think he will find that it is more likely due to a deficiency of vital force at that period. There may be a plethora of food and yet imperfect assimilation. To produce the coloured corolla requires the greatest concentration of vital force of which a plant is capable. Probably this Rose requires for its perfect development a higher and more constant temperature than the early summer affords. On this subject see the "Quarterly Journal of Science" for October, 1878; article, "What is a Flower?"—F. T. MORR, *Birstal Hill, Leicester.*

Rose The Bon Silene.—This was sent to me about 1836 by M. Vibert, of Longueumeaux, near Paris. It is the forcing Rose, *par excellence*, of all others to date. It has fine long, large, buds of a dark rosy-red, opening to a delicate pink, with a delicious odour, and not fully double. Cut when one-third grown and opened in a cool temperature it surpasses all others, having a fine footstalk and rich foliage. There are tens of thousands cut every day for our bouquet makers. Boston growers have entered into it so largely that the Rose passes under the cognomen of Boston Bud.—"Gardeners' Chronicle."

The Atlantic forest, according to Professor Gray, is composed of 66 genera and 155 species; the Pacific forest has only 31 genera and 78 species of timber trees.

PLATE CLXXI.

VERBENAS.

(WITH COLOURED FIGURES OF FOUR NEW KINDS.)

Drawn by Mrs. DUFFIELD.

VERBENAS have long been favourites because of the many uses to which they may be put. In many parts of the country, especially in the west of England, Verbenas rank high as exhibition plants; they are shown in the form of specimens in pots, and also in a cut state, much in the way in which Roses are shown. They are subjects cultivated with comparative ease; out-of-doors they bloom profusely, and stand well till quite late in the autumn; and if the lustre of the flowers happen to become dimmed by a storm, a burst of sunshine quickly restores their lost beauty. As to where and by what successive steps Verbenas have become improved, it is not necessary to allude. As in the case of other flowers, their present fine development is, doubtless, the result of years of patient industry. From the Continent have come many fine varieties, and we have also some excellent kinds the produce of English-saved seed.

For flower garden decoration, a few of the best will be found to be Celestial Blue, Crimson King, Edwin Day, cerise; Firefly, vivid scarlet; James Birbeck, shaded pink; La Grande Boule de Neige, pure white; Mrs. Mole, lavender; Oxonian, purple, with a white eye; Purple King; Wonderful, plum-coloured; and two new varieties, viz., Gruss aus Erfurt, bright scarlet, and Mdlle. Emilie Hulter, bright purple, with a white eye. A pretty and effective bed may be secured by mixing a few good varieties together.

The varieties figured in the accompanying illustration are: Annie Improved, one of the best of the few striped varieties in cultivation; Lady of Lorne, bluish white, with a rosy-purple eye, a very fine exhibition variety; and two remarkably good new varieties in the possession of Mr. Cannell, of Swanley Kent, named Henry Cannell, crimson-scarlet, a fine and effective hue of colour, and Swanley Gem, white, suffused on the edges with mauve-blue.

In the west of England, at such exhibitions as Trowbridge, Shepton Mallet, Sherborne, Bath, &c., Verbenas in pots are shown in such fine character as to astonish those not in the habit of seeing the Verbena grown as an exhibition plant. The specimens, which are cultivated in large pots and of considerable size, are laden with a profusion of good trusses of bloom, the produce of one season, from cuttings struck in March. When well rooted they are potted into small pots, and are afterwards repotted into two sizes larger; when these are filled with roots they are shifted into their blooming pots, often from 8 in. to 10 in. in diameter. The leading shoots are stopped two or three times in order to produce six or eight strong shoots, and, as the trusses of buds appear, all are removed except the terminal buds, as they rarely, if ever, produce fine pips.

To insure a good head and succession of bloom, a strong growth is encouraged, especially shoots from the base of the leading flower stem, as they are found to produce trusses equal in beauty to those of the leading shoots. During wet weather the plants are placed under glass to protect them from harm in that direction, and when the flowers are expanding they need to be protected from the sun. The best soil is loam, leaf mould, and peat in equal proportions, with a sprinkling of guano thrown among it. This gives a free, light, open soil, and the pots should be well drained.

When grown out-of-doors the Verbena should have liberal treatment; a dry, open border should be selected for it, and the ground should be trenched and well dressed with spent hotted manure and leaf soil. Under such circumstances the plants can be put out about the end of May, and as they make growth the shoots require to be pegged securely over the bed and be kept well thinned. If good blooms be wanted for exhibition in a cut state, it is necessary, as the show draws near, to place lights from a frame on the beds as a protection from heavy rains; indeed, it is impossible to have fine, clean trusses for show purposes without some such protection. Some of the finest exhibition Verbenas will be found to be Beauty of Coleshill,

Annie Improved, Angusto Buckner, Crystal Palace, Duke of Edinburgh, Her Majesty, Holfgartner, Kindermann, Lady of Lorne, Maure Queen, Pre-eminent, Reine des Roses, Star of Erin, and Warrior.

When Verbenas are exhibited as cut blooms, which they were often last year by Mr. Cannell, some five trusses or so are put into a bunch, and a stand of flowers, well set up, is a charming feature at an exhibition. Some are sweetly fragrant, a property which gives them additional value. D.

GARDENING FOR THE WEEK.

Flower Garden.

Auriculas.—These now require daily attention, and if it be intended to exhibit any plants of them, steps should be taken to forward those that are too late, and to retard those likely to be over before the show day. In this, as in most other things, those who are attentive to trifles, and who manage their plants themselves, will have a great advantage over growers who think that such work can be well carried out by others. It may not be generally known that there is quite a month, on an average, between the flowering of the earliest and latest varieties of Auriculas. Taylor's Glory and Campbell's Pizarro, for instance, are always very early, and, in order to have them in flower with the general collection, they ought to be placed in a lean-to frame or house with a north aspect. On the other hand, Smiling Beauty, Lancashire Hero, Earl Grosvenor, Duke of Argyll, Beeston's Apollo, and a few others are always late, and must be pushed forward. The Auricula is easily forced, but it must be done in one particular way; the plants must be close to the glass, air must be admitted freely by day, and the ventilators should also be open a little at night.

Carnations and Picotees.—Since these were potted, they are making good growth, and care should be taken to water only when they require it; indeed, it would be better rather to under water than overdo it. Mr. Dodwell, who has had a lifetime's experience in the culture of these plants, does not give any water until nearly the middle of April. He tells me that he potted and placed his plants out-of-doors in February, merely using the shelter alluded to last week (p. 207). Mr. Dodwell has also an excellent plan for preventing the soil from becoming hard through heavy rains, and that is by placing oyster shells on the surface, with the hollow side down. Now that fine weather has set in, and the barometer points to a continuance of it, it will be necessary, where the plants are put out in beds, to stir the surface soil, taking care that the plants are made firm and supported by a stick if required. Where old plants in borders were not layered in autumn, that had better be done now, but the plants should be allowed to flower this season without removal.

Tree Carnations.—Amongst the many plants that have come recently into general use for winter flowering, these sweet-scented, continuous-blooming subjects hold a prominent position, and deservedly so, as, for the purpose required, they have few equals. They differ from most plants in not producing a sheet of flowers at once, and in this way sometimes furnishing more than are required. On the contrary, they keep opening in succession over a long period, and in a manner that admits of every individual bloom being used. Cuttings made now from young shoots furnished by plants that have been forced, and put in a medium temperature, will root freely, and make useful stock for next winter.

Dahlias.—It is still very cold at night, even in rather favored districts; the thermometer here last Saturday registered 7° of frost—a warning that we should be very careful how we expose our plants at night; they would certainly have suffered in a cold frame if the glass were not well covered. If the plants be still in a heated house they certainly ought to be placed quite close to the glass, and be furnished with sufficient air. If stock enough be not yet obtained no time should be lost in starting such sorts as are wanted.

Pansies and Pinks in Beds.—Many Pansies that seemed hopelessly lost are now starting from under the surface of the ground, and in this way we hope to save most of our varieties. Keeping the surface soil stirred is of much benefit to the plants; it is certainly desirable to have a reserve in pots or boxes, and to keep them in cold frames, to make good any that happen to die off in winter. Pinks in beds are much the same as Pansies as regards treatment. Mr. Ball, of Slough, recommends planting them out in spring. If this be done, they must be grown in pots and kept under glass, like Carnations and Picotees, during winter.

Phloxes in Pots.—I have already stated how useful these are for conservatory and greenhouse decoration in the autumn. Phloxes of them propagated last year, and that are now in 5-in. pots, if shifted

into 9-in. and 10-in. ones make noble specimens, each with five or six spikes, which are sufficient to produce a good display. The Phlox, whether it is grown in pots or planted out, is a gross feeder. It requires rich soil and manure water in abundance when the plants are in active growth.

Polyanthuses.—These are now coming into flower very freely William the IV., Napoleon, Formosa, and Alexander (Pearson's), opened in the order in which their names stand. The two last named are fine varieties, Alexander especially so; it is an old variety and very scarce. It is a good time now to sow seeds of Polyanthus either in a cold frame or where the frame has been placed over a manure bed, the heat of which is nearly gone. Plants produced from this sowing flower very strongly next year. Do not at any time coddle the plants in heat, as this is injurious to them.—J. DOUGLAS, *Loxford Hall, Ilford.*

Shrub Planting and Renovating Lawns.—These are operations which should be completed as early as possible in order that root action may have commenced before a period of drought has set in. It is also desirable to roll all lawns well, whilst, as yet, there is moisture sufficient to render them capable of being thoroughly consolidated. It is simply labour in vain to roll lawns when dry; Mossy, or patchy places may be renovated by raking the affected spots deeply and sowing them with Grass seeds, which should be covered with fine soil and well firmed. In order to maintain a good green sward, no dressing that can be applied is so effective as wood ashes and soot mixed in about equal proportions, and strewn over the ground in showy weather. Where new lawns are to be formed by sowing Grass seeds, the sooner now they can be got in the better. The first requisite is that the ground should be well drained, the next that it should be thoroughly consolidated and have a smooth, dry surface. If it be at all wet or dauby, defer sowing till it is dry, as it is only then that the seeds can be raked and rolled in, without which it is unreasonable to expect a good lawn.

Roses.—A month ago Roses seemed to be severely injured, but the last few mild days have caused them to bud forth, and after taking a general survey, we do not find that more than two per cent have succumbed. All of them are now pushing so fast that it will be desirable to prune them immediately, after which, lightly fork in the manure that was applied as a mulching in the autumn, and if more manure can be spared, re-mulch, for Roses are not easily overdone in the matter of manure. Any that have yet to be planted should receive immediate attention.

Spring Flowers.—Already, after such protracted cold, many hardy flowers are in full beauty; indeed, spring flowers generally are growing rapidly, and, by way of setting them off to advantage, let every nook and corner be kept neat and clean. All vacant beds and borders should be put in order for their summer occupants, each being prepared according to the plant or plants intended for it. Calceolarias, Violas, Verbenas, and all sub-tropical plants cannot well have too much manure trothed into the beds, but Pelargoniums and most other bedding plants flower best when given but little. All the beds, however, require to be deeply dug. By way of increasing the space for bedding plants in houses, such as Golden Feather Pyrethrum and Tagetes signata pumila, can be raised in the open air. Sow at once on a south border, and if any old lights or hand-glasses can be used, well and good, but such are not really necessary; we sow thinly on light vegetable mould, cover the seeds with the same, and transplant direct to the flower beds as wanted, thus virtually doing away with pots, boxes, indoor space, and a great amount of labour.

Asters, Stocks, Zinnias, and Helichrysums.—These should now be sown in frames, and as soon as germination has taken place, they should be quite exposed to the atmosphere when the weather is at all favourable; when large enough to handle, prick them out into similar frames, and keep them close till they have become established; afterwards, gradually inure them to full exposure. Many kinds of annuals for early summer flowering may now be sown in the open ground, such as Mignonette, Clarkias, Collinsias, Erioseholtzia, Honesty, Larkspurs, Nemophilas, Sweet Peas, Saponarias, Scabranthus, and Virginian Stocks, all of which are cheap, easily raised, very showy, and lasting.—W. W.

Indoor Fruit Department.

Vines.—The remarks made (p. 185) with regard to late Vines are still applicable. All such Vineries should be put in working order forthwith. The few sunny days which we have had has already caused some of the more vigorous Vines to bleed, and our remedy for that is, as soon as it is observed, to start the Vines into active growth by closing the house, and maintaining a humid minimum temperature of 60°. This soon has the desired effect, as the sap is then diverted into its proper channel. At length forcing has become an

easy operation, the last few days' sun having worked wonders both as regards appearance and progress of early Vines; the attempt may therefore now be made to overtake lost time by closing up very early, and allowing the temperature to run up to 90° for an hour or two in the afternoon, taking care that there is plenty of air-moisture at the time of closing. Keep the thinning of bunches well in hand by commencing to thin as soon as the first bunch is ready. No other work should be allowed to interfere with or delay this, as the sooner all surplus bunches and berries are removed, so much the better will the general crop be. Train, tie, and stop the shoots in something like methodical order. As regards training and tying, get the side shoots in a horizontal line if you can without breaking them, but if this cannot be done, what does it matter if they are not quite straight? the fruit will be equally good. A far more important point is seeing that no more shoots are retained or tied in than can have full exposure to the light, and this latter must govern the stopping of the shoots. If there be space for the growth, let them remain, but if not, and they are likely to get crowded, then frequent pinchings will be necessary. Successional houses will require disbudding as soon as it can be perceived which are likely to make the best shoots and produce the finest bunches, and one shoot to each spur is generally ample in the case of young vigorous-growing Vines, but old Vines may generally have two growths. Though Vines may be planted at almost any time, with fair prospect of success, the best season is from now to the middle of April. Every one now knows, or ought to know, considering all that has been written, how to make a Vine border, and, this being ready, secure strong one-year-old Vines, and cut them back to a couple or three joints. As soon as these have begun to push afresh shake them out, remove every particle of soil, and replant them, spreading the roots out level, and covering with about 6 in. of soil. Then thickly mulch with stable litter, whether the borders are indoors or out; if the latter, no water will be required, and the Vines, in such cases, should also be left sufficiently long to admit of the old stems having their tops put through the wall in order that the new growth may start from the inside. If the borders are inside, water as soon as planted with warm water, but do not turn on much top heat till new root action has commenced.

Pines.—With increased solar heat a brisker bottom heat may now be maintained for plants in all stages of growth, and there should be a like increase of atmospheric moisture, except in the case of those that are in blossom; more water will also be requisite. All the stock should now be closely examined as to their requirements in this respect at least once weekly, and a weak solution of guano water may now advantageously be given to all plants, except suckers that were last potted. These should be kept moist by a confined atmosphere and occasional syringings, and the application of some slight shading till the roots are seen at the sides of the pots. Do not delay the potting of any that have been wintered in small pots, for if once they get pot-bound, the check invariably results in premature and useless fruit. All recently shifted plants should, when the sun is at all powerful, be shaded for a couple of hours each day, till the roots have extended into the new soil, when it may be discontinued, except in the case of smooth Cayennes, which do best when constantly screened from the scorching midday sun.

Peaches and Nectarines.—Continue to disbud and tie in the shoots in early houses and thin the fruit with a free hand; usually this operation is done but sparingly, till stoning is over, as so many fruits drop during that process; but the very fact of their falling should act as an incentive to thin at once. It is the strain that has been, and still is, on the trees that causes the fruit to drop, whereas, if the energies wasted in carrying an over-crop were given the chance of expending their force on just the quantity of fruit intended to ripen, there would not only be no falling at stoning time but the fruit would be in every way finer, and the uncertainty of a crop ever failing would be reduced to a minimum. Guard against the borders getting dry; so much fire heat has been very drying, and though such drought may not be very deep, still, as surface-feeding roots are of immense import, encourage them by watering with warm water. Keep also a few inches of mulching, to retain both heat and moisture, and to give off that ammoniacal vapour which is so fatal to red spider. On frosty mornings delay syringing till the sun has absorbed the condensed moisture of the previous night, but syringe freely at all other times, not only to keep at bay insect pests, but because the trees revel in abundance of moisture, so long as the air is changed daily so as to prevent stagnancy. The trees in succession houses that may be in flower during such bright weather as we are now having will need no artificial fertilisation other than an occasional shaking of the trellis. Bees, too, will now find their way to them, and aid materially in effecting a good set. Keep late houses open night and day, to retard and prevent them from getting much in advance of the trees on the open walls, in order that a continuous succession of fruit may be kept up till the open-air crops are ready.

Figs.—Beyond the importance of giving these—especially old, free-bearing trees—plenty of water, and the richest top-dressings, there is, for the present, little to add, other than that stopping the shoots by pinching will now require frequent attention, and this should be done, a few points at a time, at intervals of a few days, or even a week—a plan by which a longer succession of fruit is insured. The surface roots of Fig trees are the mainstay of the fruit, and hence the importance of top-dressing and constantly feeding with manure water. As to any that are bearing freely in pots, liberal treatment must be continued till there are indications of the fruit approaching maturity, when a drier—not drier—state, both of root-run and atmosphere, should prevail.

Strawberries.—We gathered our first fruit on the 6th—a month later than usual this year, though the plants were treated in all respects as in previous seasons, thus showing the effects of the protracted winter. Now that spring has become so far advanced, there are but three requisites necessary in order to obtain good Strawberries till the open air fruits are in. The first is, to have plenty of good plants; the second is, convenience for growing them; and the third is, never-failing attention to their wants. It is presumed that the two first are established, or the third will be impossible. I know no fruit forcing so exacting as Strawberries, for, once neglect watering or airing at the proper time, and fine fruit need not be expected. With sunny weather water will be required twice a day, or, if not, they should at least be looked over with that intent. In fine weather bees will aid the setting process, but, should a dull period set in, still use the camel's-hair brush. Crops ripening should have all the air possible; but do not attempt to roast them into flavor by withholding water from the roots—a mistake too frequently made, and which is a sure precursor of red spider.

Melons.—These are now growing rapidly, and those to be trained on trellises in houses should have the side shoots pinched till they reach the trellis, but those in frames should be allowed to retain their side shoots, and the main points should be pinched out as soon as they attain 18 in. or 20 in. in length. Keep the linings well renewed, so as to maintain a minimum temperature of 65°. Probably no water will be required till after the fruit is set, but it will be well to occasionally examine the soil in order to prevent its becoming anything like dust dry. In houses where the air is more light and drying the plants should be syringed at least once a day, and this will be almost all the water they will require till the sun has acquired greater power. Now that daylight and sunshine are in the ascendant, increase both the atmospheric moisture and the temperature; the latter may range by night at from 65° to 70°, and by day from 70° to 80°.—W. W.

Extracts from my Diary, March 17 to 22.

FRUIT.—Shifting Strawberries from 6-in. pots into 8-in. ones. Thinning Grapes. Shifting Figs out of Pine stove into Peach house. Potting another batch of Strawberries into Pine stoves. Shifting pot Vines out of Vinery into Pine stove. Top-dressing Strawberries for forcing. Watering late Peach houses. Pruning and nailing Plums. Hoeing and cleaning among Gooseberry trees. Tying Peaches in early houses. Thinning flower buds of Cherries in cold houses. Tying and stopping Vines. Tying Fig trees. Wheeling long manure among Currant trees as mulching. **FLOWERS.**—Boxing Pelargoniums for summer bedding out of cutting pots. Shifting seedling Coleuses into 6-in. p'ts. Potting in cuttings of Verbenas. Sowing Cockscorns and Foxgloves. **VEGETABLES.**—Sowing the following kinds of Peas, viz., G. F. Wilson, Osaman Pacha, Marvel, and Standard. Planting another batch of Cucumbers in Pine stove. Cultivating ground between Cabbages. Sowing Osborn's French Beans in 4-in. pots. Planting International Kidney and Myatt's Prolific Potatoes in frames for exhibition purposes. Pricking out Cauliflowers into frames out of seed boxes. Potting Tomatoes. Tying Cucumbers and sowing more seed. Drilling ground for Potatoes. Preparing border for Parsley by dressing it with ashes from the rubbish heap.—R. GILBERT, Burghley.

Ants and Paraffin.—I have lately been troubled very much with ants amongst pot Roses which were fast coming into bloom. I found several of the bloom buds eaten partly away, and a closer examination revealed the fact that the depredators were ants. I watched them through a microscope and saw them plainly doing the mischief. I at once procured a large watering pot full of water, with just enough paraffin added to taint the water; this was sprinkled through a fine rose over the heads of the plants. The ants at once took to flight and not one has since reappeared. This may prove a hint worth remembering, especially by those who are in any way troubled with these little pests.—H. HABERS.

TREES, SHRUBS & WOODLANDS.

CUTTING DOWN ARBUTUS HEDGES.

"E. F." (p. 211) does not say what the species of *Arbutus* is of which the hedge described as twenty years old and now too high is composed, but I have little hesitation in saying that it may be cut down with safety, as *Arbutus* are plants that generally break freely, and afterwards make vigorous growth. Some of the strong-growing species, such as *A. Andrachne*, that had attained a large size, and were killed in the winter of 1860-61 down to the surface of the snow, which then covered the ground, broke from the crowns in the spring, and have now formed fresh stems 8 in. or 9 in. in diameter, with heads proportionately large, and without close examination it would not be noticed that they ever had been injured in any way. I should recommend the hedge to be at once cut down to within 12 in. of the ground, using a saw for the operation, not a bill-hook, which will split and hagle the stumps. Do not cut these, or anything else that is intended to grow up again, and is exposed in the open air, straight off in a horizontal line, particularly when the wood has grown to a considerable thickness, but slanting, say at an angle of 50°, so that the water will not lodge on the surface of the cut. By doing the work immediately, the latent buds on the stumps will have time to gradually develop, and be in a state to push shoots in good time, so that they may get fully matured before autumn. The young growth will most likely be of a character to require shortening back somewhat twelvemonths hence, or it will rush straight up then without breaking, so as to have sufficient bottom.

T. BAINES.

— *Arbutus*, if cut down now, will break as freely as common Laurels. Use a bill-hook in preference to a saw for the purpose, and do not cut them lower than 2 ft. from the ground.—W. H.

— Let me tell "E. F." (p. 211) that we have many *Arbutus* trees here which are constantly becoming too large for their places, and we cut some of them down nearly every winter to generally about 3 ft. from the ground, and they never fail to start freely and strongly into growth again. With us, in this respect, they might be compared to Willows.—CAMBRIAN.

— *Arbutus* may be cut down with great advantage. Two years ago I cut down a large scraggy tree within 18 in. of the ground, which has now acquired a perfect bush form with fifty or sixty shoots 5 ft. high. They should be cut down at once.—W. V.

WOODLAND WORK FOR MARCH.

THE arrears of work, both in the woodlands and in the nurseries, are so heavy that the greatest activity will be required to get them well under, so as to have everything in readiness for the bark stripping should the season prove an early one. Where the thinning of close plantations, which have been hitherto neglected, is not yet completed, it will be better to defer the work for another winter, than to carry it on after the trees begin to break into bud, as the standards are certain to receive a severe check from late spring frosts if such occur. This remark applies especially to mixed plantations of about twenty years old and upwards, where the trees have become very much drawn up, and, consequently, slender in the stems. Here thinning should now be very cautiously carried out, and the operation is better extended over two or three years. Wherever planting and transplanting are now going on, great care should be taken to keep the roots well covered, as the keen and frosty air of March often proves very injurious to young plants during removal, and a good puddling will prove very beneficial to those which have to be carried any considerable distances. Push forward rapidly the falling of coppicing, so as to have everything cleared from the stools by the beginning of April; also trim and round off badly-cut stools, and remove the debris of broken branches and decaying wood, and everything likely to interfere with the free growth of the underwood. In the nursery the spaces which have been cleared of plants may be well manured and dug in readiness for a crop of vegetables, which will prove the best preparation for a future tree crop. A liberal dressing with well-rotted manure, to be followed either by roots or corn, will leave the land in better condition for seedlings than a badly-worked summer fallow. The latter end of March and the early part of April are the nurseryman's best seasons for the preparation of his seed-beds and the sowing of the seeds. In most places very little of this work was done in the autumn, and winter set in too early for those who put off the operation beyond November. Acorns, Walnuts, and Spanish and Horse Chestnuts may still be planted in a good loamy soil, fairly dry and well pulverised. Less covering will now be required than was necessary for autumn-planted seeds. About 2 in. apart will afford the young plants fair nursery spaces. If placed in drills the plants are more conveniently undercut, where such is the

practice; but, when the smaller seeds are sown, the young plants afford each other greater protection from winds, cold, and drought. Beech, Elm, Maple, and Sycamore are so liable to be cut off by the late spring frosts that a good part of the seed is better reserved for sowing in the early part of April. The seeds of Alder, Yew, Holly, Hawthorn, Hornbeam, and Mountain Ash should be very lightly and evenly covered with fine soil, which is best sifted over them to a depth of from $\frac{1}{2}$ in. to 1 in., according to the size of the seeds. Much more seed is generally destroyed by too thick than by too light a covering of soil. The stems arising from seeds too deeply buried are more liable to attack than those from seeds lying near the surface, and which, from the sun's early influence, start off at once into vigorous growth. The land intended for Ash keys should be deeply stirred and well pulverised, and it should not be too much sheltered. The seeds of the Pine and Fir tribes require to be thickly sown and well protected from birds, which often prove very destructive to them as they rise from the seed bed. Beds of from 3 ft. to 4 ft. wide are convenient for these, and the seeds require to be sown about as thick as Oatons, or two to the square inch. They flourish best in a soil moderately light and in good condition, not too much exposed to the sun nor too closely shaded. As the plants appear aboveground cover the beds with nets and water occasionally in dry weather. To insure the young plants from frosts stick the small spray of the Elm, Beech, &c., in the beds. Upon very light land, where the plants are apt to become loosened by the wind during the summer, a little finely-sifted soil scattered over the beds will insinuate itself around the stems and fix them.

A. J. BURROWS.

THE KITCHEN GARDEN.

SPROUTING POTATO SETS.

THOUGH this is a common enough practice, it is not so frequently observed as it ought to be. Sprouting the sets is of the greatest importance in unfavourable seasons, when planting cannot be proceeded with, and also in late and cold situations. Sets sprouted about this season and planted out in April or even in May, will produce a crop weeks before those planted without sprouting, though the eyes may be moving. Sprouting, however, requires to be done in an intelligent manner. It is a bad plan to start the tubers in strong heat, as in that case the shoots come weakly, and after they are put out, even if hardened off previously they often go off by canker or damping. The best plan is to start in time and in a moderate heat. We find that the eyes of our main crop seed, if procured in February and laid on the bottom shelves of the fruit room, where the temperature generally ranges from 45° to 50°, and covered over with short straw to keep them dark, push fast enough, and that the shoots are generally 1 in. long or more by planting time. Early varieties need a trifle more heat. They should be packed as closely together on end as they will stand, in boxes or old flat-bottomed hampers, and covered about 2 in. deep with fine, light soil, from which they may be lifted easily when transplanted, with plenty of good roots, and at the same time they can be disubbed if necessary. In transplanting, very little of the tops should be left above ground—if at a season when frost may still be apprehended, none at all indeed.

Unless the weather be very unfavourable, Potatoes forwarded in this way and planted out get hold of the soil and grow just as soon as those forwarded in pots and planted out with balls of soil, a plan which entails a great deal more labour. The sets may, however, be sprouted without rooting, and I am not sure that this is not just as good a plan as the other, while it is certainly more convenient. I once planted out Potatoes that had been started in soil and which had long roots attached to them, and another lot that had been started in a cellar all the winter, and which had sprouted 3 in. but had no roots, and, if anything, these last grew the fastest. The reason of this, probably, was that those transplanted with roots received a check, while those without roots received none, but were rather encouraged by being transferred to the soil. A cellar is as good a place as any in which to start seed Potatoes, if a little light can be admitted to it, as the temperature is usually high enough to cause the sprouts to move gently, and if the Potatoes be spread out thinly on the floor the sprouts will not be weak and drawn.

S.

DALMAHOY AND YORK REGENT POTATOES.

"A. D." asks (p. 206), "Where exists the difference between Dalmahoi and York Regent, except in the imagination?" If "A. D." knows anything of one of these sorts he is certainly totally unacquainted with the other, or he would never have asked such a question. The chief difference between the two sorts named is that the Dalmahoi is a second early kind succeeding the Kidneys, and generally coming in for use during July and August, while the York

Regent is a late sort, rarely fit to lift till October. They are also unlike in flavour, the Dalmahoy being the best of the two in this season, for it is not a keeper like the Regent, while in their foliage they are so unlike that one might tell the different breadths of each a long way off. I have grown the two together for years, procuring the Dalmahoy from a reliable source in Scotland, and the Regents from a Yorkshire dealer. As to Myatt's and Veitch's Kidneys, they are also two sorts.

—“A. D.” might have observed that I neither said, nor meant to imply that the Kidneys which I named (p. 192) were farther distinct in character than being forms of a well-marked type, any one of which was enough to grow. The fact of my only recommending one was sufficient evidence that I did not consider them very different from each other. I am aware of the conclusions arrived at by the Chiswick trials; but, nevertheless, there is a difference in some of the kinds there pronounced so near alike as not to deserve distinct names; this the following instance confirms:—An acquaintance of mine, who yearly grows 10 or 12 acres of Potatoes for seed, asked me to get him any new kinds that made their appearance, which I had reason to think were really good. I procured for him a couple of bushels of Hammersmith Kidney the first year after it came out; they were planted in rows through the middle of a 10-acre piece of ground, beside Myatt's and other Kidneys; but the crop of the Hammersmith variety was a complete failure through rabbits eating the whole of the leaves as fast as any were produced during the season, leaving the stalks as bare as if they had been hand-picked, and not another Potato was touched, although there were at least a score of kinds grown. This was the first instance I ever knew of rabbits eating Potato tops to any extent, but it clearly went to prove that this Kidney was not identical with the others, though the difference thus determined was of a nature that proved nothing either for or against the merits of the tubers. The difference, with little distinction, in kinds bearing different names has led to no end of confusion. I could go into any of the great Potato growing districts and find a dozen sorts different in both their time of coming to maturity and also in their eatable quality, yet all bearing the name of Regent. When speaking of this good old kind I mean the true York Regent, a very different variety from Dalmahoy; this, when true to name, has much deeper eyes, is rougher looking, larger, not so early, and, at its best for using, later than the Regent. Arguing in the same direction, on similar ground to that which “A. D.” takes up, I have heard it said that Patterson's Victoria is a Regent, which, so far as general qualities go, holds good, but it is late in coming to maturity and a very late keeper, properties quite sufficient to make it deserving of the distinct name which it bears.

T. BAINES.

—“A. D.” (p. 206) may be right about Myatt's, Veitch's, and Lee's Kidney Potatoes being alike, but he is wrong as regards Rivers' and Gloucestershire Kidneys. Here no two Kidneys could be more dissimilar. Rivers' with us produces a good crop of ordinary-sized tubers at least twelve days earlier than the Gloucester, while the tubers of the latter are larger than those of Rivers', as are also the stems, although both are grown together on the same piece of ground. Rivers' Kidney we always force in frames, but we would never think of using the Gloucester for such a purpose.—CAMBRIAN.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Potatoes and Frost.—“A. D.” (p. 206) certainly gives common sense advice with regard to the protection of Potatoes from frost. We all do our best, according to circumstances, as to storage, and I consider that “Cambrion,” in THE GARDEN of March 1, rather gave us a hint as to how to make the best of a bad job than encouraged neglect. As to the settlement of the question with regard to distinctness between the so-called different varieties of Ashleaf, I cannot quite accept the dictum given at Chiswick as final, being convinced, after several years' trial, that we might as well say all Tea Roses were the same. What an exceedingly bad soil “A. D.” must have the misfortune to cultivate. Regents, I thought, would prove successful everywhere, and however early the disease might come, I always considered that they would be fit to eat, however small. The Regent answers equally well on chalk as on deeper soil, nor can any fault be found with it, except that in very wet seasons it has a tendency to supertuberate. As for American Potatoes, no doubt in their native land they are good; in England all, from Early Rose to Climax, are equally bad, nor has our Patterson's Victoria been beaten, except, perhaps, by its seedling the Queen.—EUGENE E. P. LEGGE, *Dillon Cheney, Dorset.*

Magnum Bonum Potato.—In answer to “B. H. J. S.” (p. 190) allow me to say that I find this Potato, when cooked, to be quite a “flour ball” and excellent in flavour. The only drawback which this

Potato has is its liability to produce many ill-formed tubers. Out of several bushels grown here last year, I do not think I could have selected a peck of what could be called well formed ones. In the case of this variety there was very little disease. It was planted in rows 2 ft. apart, and 2 ft. asunder plant from plant, no manure being put on the ground for one year previous to planting. It should be borne in mind that there is quite as much art in cooking a Potato as in growing it; if more attention were paid to this particular point, we should not hear so many complaints as regards quality.—A. H.

—My experience of Magnum Bonum is the same as that of “B. H. J. S.” only the yield with me was inferior; the Potatoes were uneatable. The sort that does best with me is Patterson's Victoria. R. K., *Devonshire.*

Winter Cucumbers.—Although the season has been very unfavourable for winter Cucumbers, there having been continuous frost and scarcely any sunshine, yet we have had an abundant supply. The sort on which we rely is Rollisson's Telegraph, a most prolific variety, four or five fruits showing at almost every joint of new growth, and necessitating constant attention in removing all surplus ones, or they soon exhaust the plants. For ordinary use I find medium-sized Cucumbers preferable to the long exhibition kinds, as, when Cucumbers are required daily, there is a great waste in supplying any other than those which produce fruits from 12 in. to 16 in. in length.—J. GROOM.

Webbs' Perpetual Bearer Cucumber.—Amongst recent introductions this new Cucumber has proved with me to be a very valuable variety. I have grown it side by side with several well-known sorts, viz., Telegraph, Duke of Edinburgh, Berkshire Champion, and others, and find it to be better than any of them. It runs from 18 in. to 20 in. long, good in shape and colour, and excellent as regards flavour. It is also the most prolific Cucumber with which I am acquainted.—R. G.

ANSWERS TO CORRESPONDENTS.

Multiplying Vandas.—I have a large plant of Vanda tricolor, the lower leaves of which are gone. It has near the bottom two side growths so that I could now make it into three rooted plants. Is it safe to do this? and is this the time to do it? It has flower spikes just appearing; Vanda savais the same.—A. A. [Vandas may be divided and potted in fresh pots almost at any season, provided they have young roots attached to them. Peel them off after shaking the plants clear of the compost, and pot them to the lower leaves, raising them to form when finished a good convex surface. If you are careful, the operation will not interfere with the efflorescence of the flower spikes. Sometimes, however, Vandas make larger “shows” than their strength warrants, and the flower spikes, especially in an embryo state, go off. All Vandas, in fact, require handling and potting down as they grow to some size, to keep up a good appearance amongst their associates in the Orchid house.—J. ANDERSON.]

Goat Moth Caterpillars.—In one of our Rose borders I found a large caterpillar, which, I am told, is that of the goat moth. How can I keep it? what does it eat? and what length of time must elapse before it reaches a perfect state?—W. C. B. [The caterpillar of the goat moth bores into the stems of various trees, forming long galleries in which it lives feeding in the wood of the tree. Within these galleries it generally becomes a chrysalis, but sometimes it leaves the tree and undergoes its change to the chrysalis state in the ground at the root of the tree. The caterpillar is about three years in attaining its full size, when it is about 4 in. in length. If the caterpillar in question be full grown it may become a chrysalis if placed in a box, at the bottom of which is about 4 in. or 5 in. of fine moist earth. If not fully grown it would, I imagine, be very difficult, if not impossible to rear it without placing it in a tree into which it could bore, when, of course, the caterpillar would be lost. If “W. C. B.” would send a description of the caterpillar, it might be possible to tell him if it were that of the goat moth or not.—G. S. S.]

Holly Hedges.—I want to plant a Holly hedge against a wall facing the south as a background for a border of herbaceous plants. What time of the year should I plant? What sized plants would be best? and does the ground want any particular preparation?—A. M. A. [Hollies require ground in which they are to be planted to be fairly dry naturally, or, if not, made so by draining; but a border that will answer in this respect for herbaceous plants will do for the Hollies. If there be a sufficient depth of soil to admit of the ground being dug 15 in. or 18 in. deep it should be pressed down, putting in a good dressing of rotten manure, to which few plants are more partial than Hollies. Plant either in the middle of April or beginning of September; the plants may be either of the ordinary trade size for hedges or up to 5 ft. or 6 ft.; this is a mere question of price. If immediate effect be required the larger ones will give it at once, but whatever size is employed the plants should be such as are in a condition for removal without serious check by having been transplanted not more than two years ago. Whichever time is decided upon for planting, they should not be longer out of the ground than can be avoided; they must be thoroughly soaked with water when put in, and,

if the work be done in April, again well watered at such intervals through the summer as they may appear to require it by the more or less dry weather which ensues. The larger the plants are the more attention will they need in this respect. If not planted until September, one good watering at the time of planting will be enough. Plants large enough for the wind, to have much hold upon them will require staking to prevent their being disturbed by it.—T. BAINES.]

Eucalypti.—*Enemouth.*—Seeds and plants of *E. amygdalina* and other *Eucalypti* may be had of Messrs. Laing & Co., Stanstead Park, Forest Hill; from Messrs. E. G. Henderson, Pine-apple Place, Maida Vale, and other metropolitan nurseries.

General Index to Back Volumes of the "Garden."—THE GARDEN has now reached so many volumes, that, as a subscriber from its commencement, I venture to suggest the desirability of a General Index being published; say up to the end of last year. It would be a great boon.—M. W. [We intend publishing a General Index to the back volumes of THE GARDEN, at the end of this year or next.]

Books.—J. H. W.—There is no such book anywhere published. The species of plants are so numerous, that no one work could deal with them as you desire. Your only plan is to get different books; as, for example, "Williams" for stove and greenhouse plants, and "Hardy Flowers" for border plants, &c.

Names of Plants.—*Cypress.*—1, *Pinus Pinaster* var. *maritima*; 2, *Thuja occidentalis* var. *sibirica* Hort.; 3, *Cupressus Coreana*; 4 and 5, *Cupressus Lindleyi*, but cultivated as [Knightiana and elegans]; 6, *Fitzroya patagonica* H. & Son.—*Spartanum* *africana*, *H. Moss.*—*Dendrobium* *Picardi.* *W. B. H.*—*Daphne Mezereum*. *T. E.*—*Dendrobium nobile coreulescens*.

Mutisia decurrens.—I shall be very much obliged to any one who will kindly tell me where this plant can be obtained. I have been trying to get hold of it for some time, and Messrs. Osborne, of Fulham, have been helping me, but hitherto in vain.—H. EWANK, *St. John's, Hyde.*

Librarian Coffee Seeds.—How long do these take to germinate? and what is the most suitable temperature, and best method of growing this Coffee?—W. G.

STORING ICE.

It may be that I am wrong and that Mr. Thomas Williams (p. 161) is right in reference to this subject, but some of his suggestions respecting storing ice seem unsound in principle. I have always understood that a lump of ice could only melt by the action of heat on its outer surface, and that the object of stacking in the form of a cone was that the heap might expose the least amount of surface to the action of the air in proportion to its bulk. No drainage is needed except where melting is going on, and that only takes place at the sides of the heap near the walls of the icehouse. No melting takes place in the centre of the heap, and it of course follows that there is no need for dr-inage there. Yet Mr. Williams recommends running a chimney stuffed with straw up the centre of the stack for drainage purposes, but which is simply a device for creating the very evil that it is intended to cure. If we desired to make an ice house in which the ice would waste quickly nothing better could be devised than Mr. Williams' plan, if the circumference of the central flue was only enlarged a little, as by such means the heap of ice would be exposed to the air both inside and outside, and would waste proportionately quick. As to the use of straw, in our house here, which is exactly the shape of that figured in THE GARDEN, only that it has double walls, no straw is used; the ice keeps just as long without it, and we have tried both plans, packing the bundles of straw exactly as Mr. Williams recommends, but round the sides only. Your correspondent says, "Why should we pound our ice in filling the house?" The reason, I should imagine, is very easily given. It is pounded because one can get twice or three times more ice into the same space by doing so, than could otherwise be got into it. This any one may convince himself of, by filling a box with ice packed in its rough state, and then breaking it up fine and observing how its bulk is reduced. Storing Wenham Lake ice is a very different matter from filling ice houses in this country. The blocks are sawn out square, and packed methodically together so that no space may be lost, but such ice as we are able to get during our fickle winters, is not thick enough to be manipulated in this way, and can only be stored economically and expeditiously by being pounded to pieces, and the smaller it is broken the better. If ice were built up in layers, formed as Mr. Williams suggests, I have no doubt it would keep better; but can he tell us how this is to be done in an ordinary way, when, as often as otherwise, the ice is so thin that it will hardly stand pulling out of the pond. The building up suggestion is impracticable. C.

—My remarks on storing ice (p. 161) I felt sure would evoke criticism and comment; but, so far, I have come off better than I anticipated. Routine work is not always rational work, and practice too often sanctions a thing for which it would be hard to find a reason, and whoever has the boldness to question, or to depart from, an anti-

quoted idea, or practice, is almost certain to meet with reprobation. Mr. Dennis, in criticising my communication (p. 191) has gone further than was necessary. I never hinted about "giving the palm" to the rough and ready method, considering the storing of ice a very costly luxury. What I really meant was that, as not one in a thousand could afford to build an ice house, thousands may enjoy the luxury of ice with little more trouble than that required to store a mound of Potatoes. What I meant by strawing ice wells in an "ineffectual manner" does not imply careless or slovenly work; straw applied in a loose or literary manner is "ineffectual," compared with that material used in a compact, straight, methodical manner. Mr. Fairweather seems to think (p. 191) that lining with straw is useless; but, where straw is employed (and I am of opinion that in most cases it will continue to be used), loose straw, as commonly applied, is no more to be compared to straw placed in a methodical manner than a rubble wall can be compared to squared stone. Mr. Dennis states that straw applied loose is superior, when well done, to straw tied up in a straight, systematic manner, and asserts that it will act exactly in the same manner as regards drainage. I am afraid Mr. Dennis will stand alone in the latter opinion. It is tantamount to declaring that every hay stack, Corn stack, or thatched building needs no thatching, properly so-called, but may have the straw put on in a loose manner, as in that way it will carry off the rain equally well. Surely that cannot be correct; loose straw will take in water as quickly as the other; so will a sponge, and the one will part with it almost as soon as the other. Mr. Dennis further enquires "how often would an opportunity occur of filling an ice house with ice and water?" and answers "once in twenty years." I reply, not twenty hours. It is always supposed to be frosty weather when ice houses are being filled, and water applied at the same time will, by contact with the ice, be almost immediately congealed, and will, if the mass be high and large, never percolate to the bottom, and that is the reason why I advocated the process to be done gradually, weather permitting, but it may be done at once. Fill a tall cylinder with broken ice, place it out-of-doors in frosty weather, when full of ice apply water, and Mr. Dennis will find that the converting the water into a solid state, is not a phenomenon that may only happen once in twenty years.

Ormskirck.

THOMAS WILLIAMS.

NOTES FROM KEW.

Hardy Plants.—Most conspicuous among the early spring favourites are the numerous kinds of Crocuses, which exhibit considerable diversity in form and colour. The new and rare *C. etruscus* is in fine condition; it has numerous delicate mauve blossoms, and a golden ring at the inner base. *C. Weldonii* is an exquisite little gem, bearing snowy white blossoms and bright orange stigmas. It is regarded by some as a variety of the ordinary *C. biflorus*, but such a distinct plant is—at least, for horticultural purposes—deserving of specific distinction. It is a native of Dalmatia, whilst *C. biflorus* and its obvious form, are natives of Italy. By-the-way the non-striped form of *C. biflorus* is also very distinct, the upper half of the flowers being pale mauve, and the lower part having an orange tinge. It is called here *C. biflorus striatus*. The small form, *pusillus*, merely differs from the type in the matter of size, as does also *argenteus* in the other direction. The old favourite *Cloth of Gold* *Crocus* is eclipsed by few; the rich orange of the inner part of the flower charmingly contrasts with the velvety-black of the outside. *C. suaveolens* is a neat little kind, much in the way of the better-known *C. Imperati*, but smaller, and having, in addition, a pleasant perfume. One of the finest of the whole set is *C. banaticus*, whose flowers are nearly as large as those of the garden forms of *C. vernus*. They are bright violet purple, and have a conspicuous V-shaped marking of deep purple on the outside tips of the blossoms. It has also broader leaves than the majority of cultivated kinds. It is a native of the mountains of Hungary and Transylvania. *C. Fleischeri* ranks highest on the score of rarity, if not on that of beauty. Its flowers, which are creamy-white, are elegantly pencilled with deep purple lines. The fibres on the bulb of this kind are distinct from those of any other Crocuses, being interwoven in a very remarkable manner. It inhabits limestone hills near Smyrna. The Siberian Squill (*Scilla sibirica*) and the two-leaved kind (*S. bifolia*), with its various forms, were the first to peep above ground this season. They associate charmingly with Krelage's variety of the netted Iris (*Xiphion reticulatum*). This, though not so brilliant in colour as the type, is highly desirable, on account of its opening its flowers a week or two earlier. It may at a glance be recognised by the violet colour of the falls, whereas in the original kind they are of a deep rich purple. The beautiful *Saxifraga Barseriana* is well represented, and amongst the specimens one may detect well-marked forms differing in the size of the flowers, the length of their stalks, and also in the habit, some being of a loose, spreading growth, others forming compact, dense tufts. S.

Rocheliana is scarcely inferior to the last, though not so free flowering, and it has smaller flowers. The opposite-leaved Saxifrage (*S. oppositifolia*) and its white variety should be seen on every rockery, more especially the lovely Pyrenean variety, which is considerably larger in all its parts than the type and equally free flowering. The form *rubra*, of which a coloured plate appeared in THE GARDEN last year, is a shade darker in colour than the original.

Hardy Shrubs.—Though not very showy, Standish's Honeysuckle (*Lonicera Standishii*) deserves a place against a wall on account of its early flowering, and also on account of the delicious perfume yielded by the blossoms; the latter are about 1 in. long, and of a creamy-white colour, borne profusely on naked branches. *Jasminum nudiflorum*, too, bears golden-yellow blossoms in profusion. It is a plant that cannot be too highly recommended, on account of its early flowering. Handsome, both in foliage and flowers, is the Nepalesse Barberry (*Berberis nepalensis*), a capital shrub for a wall, a position in which it thrives more vigorously than in a shrubbery.

Greenhouse Plants.—Several elegant climbers well deserve a passing notice, such as *Kennedyia rubicunda*, a New Holland plant, producing a profusion of large Pea-shaped blossoms, of a deep red colour. *K. ovata* and its variety *rosea*, very desirable evergreen kinds, are now bearing a copious supply of dense clusters of small light purple flowers, which are very useful for cutting purposes. One of the handsomest of the Honeysuckles is the North American evergreen kind (*Lonicera sempervirens*), which is now very showy, bearing, as it does, numerous clusters of scarlet and orange-tipped blossoms. A curious as well as handsome trailer is the Chinese five-leaved *Akebia* (*A. quinata*), bearing, as its name implies, leaves with five oblong leaflets and loose clusters of barren and fertile flowers, the latter twice the size of the former, and both of a deep claret colour. *Hardyana Comptoniana* at first sight reminds one of the ovate-leaved *Kennedyia*, but differs in the form of its leaves and also in the much darker colour of the blossoms. All the above can be strongly recommended for training to the rafters of even small greenhouses, as they are graceful in habit and are abundant flowerers. As a basket plant few are more suitable than the profuse flowering *Crassula* (*C. profusa*), the slender branches of which hang gracefully over the sides of the pots, and are literally covered with clusters of white, star-like blossoms; it delights in a dry atmosphere, and is therefore admirably adapted for room culture.—W.

NOTES OF THE WEEK.

White Lilac.—We have lately cut in great quantities, and of the purest white. We dig up large bushes, 8 ft. or 9 ft. high, of the common large-flowered purple kind, with good balls, and set them in corners of early Vineries and Peach houses. A temporary box of bricks is constructed for enclosing soil round their roots. They are kept syringed in a water-l, like other occupants of the house, and, with the exception of the partial shade obtained from the Vine leaves, they have had all the light that there has been. The branches have been tied up to economise space, and thus bundled together, they have looked like pillars of snow. Lilacs produced in this way is preferable to that grown in darkness, as the foliage is of its natural colour, and in the case of flowers, even for table decoration, there is nothing like their own foliage for garnishing.—JAMES GROOM, *Linton Park, Maidstone*.

Double-spathed Arum Lily.—The most striking flower which we have seen for a long time is a noble specimen of a double-spathed Arum Lily (*Calla ethiopica*) grown in Mr. Leaf's garden at Pain's Hill, Cobham. The spathe, taken together, measured nearly 16 in. across, and each, separately, 6 in. in diameter. Double spathe is not uncommon with this Arum, but we never saw both so perfect as in the case just referred to.

Hardy Flowers at Tooting.—The few days sunshine which we have had have done much to forward hardy flowers. In Mr. Barr's ground Crocuses make a fine show, and Hepaticas are equally good; they consist of single pink, double pink, single blue and purple, and even small plants represent complete masses of brilliant blossoms. Cyclamens have not done so well out-of-doors this year as usual, excepting those in pots in temporary frames, which make a fine display. They consist of *C. coum*, rose; *C. Atkinsi*, white; and *C. ibicolum*, dark rose. Snowdrops, especially *Galanthus plicatus*, are very fine; such bulbs as were moved last year and replanted not too thickly in beds bear very large blossoms, and show that, whilst allowing bulbs to stay in the ground undisturbed for years is calculated to increase the quantity of blossom, it is by no means the best method of obtaining fine flowers. *G. Elwesii*, a new and pretty Snowdrop, is now in flower, and the Winter Aconite forms quite a carpet of green-

ish-gold flowers. The white Hoop Petticoat Narcissus (*N. monophyllus*) is blooming well in a raised frame, and other kinds of Narcissus are fast coming into bloom, as are also Squills. *Aubrietia deltoidea variegata* (the golden-leaved *Aubrietia*) is a pretty plant, now in flower in Mr. Parker's grounds, in which we also noticed the Winter Snowflake (*Leucojum vernum*) in full beauty. Iris Krelagei is opening several flowers, and Narcissus minor, the earliest of the Daffodils, is in full bloom.

Rhododendron arboreum at South Kensington.—The fine *Rhododendron arboreum*, for which the great conservatory in the Royal Horticultural Gardens at South Kensington is celebrated, is now in great beauty. It is a noble specimen, and bears hundreds of trusses of bright crimson-scarlet blossoms.

Primula Eva Fish.—This is one of the most attractive of double Primulas. Its flowers, which are very large and double, with fringed edges, are bluish-violet, a colour which contrasts well with the white flowers of *P. Blushing Beauty*, both of which, together with many others, may now be seen in good condition in Messrs. Henderson's nursery at St. John's Wood, where they originated.

Cornus Mas variegata.—This, in addition to the beauty of its foliage in summer, is valuable in the shrubbery in winter, thickly beset, as it is, with clusters of bright yellow buds. In this condition we find plants of it in Mr. Parker's nursery at Tooting, where, among other trees and shrubs, they have, at this comparatively flowerless season, an interesting appearance.

Iresine brilliantissima.—Where highly-coloured plants are desired for ribbon or carpet gardening this cannot fail to be a favourite. It is dwarf in habit, bright rosy-crimson in colour, and in every way much more effective than any other plant of the same class. It originated in Mr. Cannell's nursery at Swanley.

Hardiness of Aralia Sieboldi.—That this plant is perfectly hardy may be proved by the fact that examples of it in Messrs. Osborn's nursery at Fulham, have withstood the late severe winter without much apparent injury, and this is by no means a favorable situation. It is a noble plant in shrubbery borders, and its perfect hardiness gives it additional value.

Selaginella Wallichi.—This is one of the most useful of Club Mosses for pot culture. It throws up long, graceful fronds of a glistering bronze colour, which, for vase decoration, are equal to those of any Fern used for that purpose, and well-grown plants of it might be made available for dinner table decoration. It is grown well by Mr. Williams at the Victoria nursery, Holloway.

Hardiness of Ficus minima.—This is one of the neatest and best of plants for covering walls in plant houses, and it may also be used with advantage for many purposes out-of-doors, it being much more hardy than is generally supposed. We noticed a plant of it growing on a wall in Mr. Parker's nursery at Tooting, which had withstood the late severe winter without sustaining any apparent injury; whilst the larger kind, *F. repens*, growing in the same place, is almost killed.

Tree Pæonies.—There will shortly be a fine display of these in Messrs. Henderson's nursery at Pine-apple Place, where, as elsewhere, they are found to be valuable for conservatory decoration, and for supplying out flowers. They are grown in cold houses or frames till the bloom buds show themselves, when they are subjected to a little heat, which has the effect of speedily bringing them into blossom in a cool house. These flowers last for a considerable time in perfection, and being large, handsome, and sweetly scented, they have a fine effect when associated with *Deutzias*, *Amaryllises*, and similar plants in bloom.

The Rose House at Gunnersbury.—This is, perhaps, one of the best Rose houses to be found near London. It is span-roofed, with a narrow brick bed all round and a large bed in the middle. In the narrow beds are planted Tea Roses, one to each rafter, and these are trained under the roof, but they are confined to a space of 2 ft. in width so as not to obstruct the light too much. A hedge of *Gloire de Dijon* occupies the centre of the bed, and the remaining space is filled with dwarf Hybrid Perpetuals, which, although they get a little drawn on account of being a long way from the glass, supply a large quantity of buds for cutting. Many hundreds of buds, just expanding, may now be found in this house.

Mr. Little's Cyclamens.—These have long been noted for their excellence, both as regards growth and quality of bloom. This year, however, the plants are not so satisfactory as usual, owing to some mismanagement over which the owner had no control, but as regards richness of colour and strain generally rapid strides are still being made. Compactness of growth and shortness of flower stalks are aimed at rather than size, and by means of skilful cross-breeding,

perfection, from a florist's point of view, will doubtless ere long be attained. In a long, light, airy house, Mr. Little has at present such a display of Cyclamens as one seldom has an opportunity of seeing in any one place, and in colour they vary from pure white to the deepest purple and crimson. These are backed up by some finely grown seedling Amaryllises, Azaleas, Pelargoniums, and Primulas.

Salvia splendens.—An improved variety of this brilliant Sage has been flowering freely in Mr. Cannell's nursery at Swanley. Its leaves are wholly different from those of the type, being much larger, round, and deeply serrated on the edges, whilst the flowers, which are produced in large trusses, are treble the size of those of the common kind.

Grapes at Oxenford Castle, Dalkeith.—Just now Mr. Anderson has a magnificent display of Grapes in his stove shelves in bottles. They consist of not less than 200 bunches of Lady Downes, Alicante, Pearson's Golden Queen, Gros Colman, and Muscat of Alexandria. It is somewhat difficult to keep good Muscats so late, but nevertheless the bunches look well among their associates, and scarcely anything else is eaten so long as they last. Golden Queen looked plump and fresh, and was as good in flavor as any yellow Grape, with the exception of the Muscat. The conserving room is new, and at present unheated, but Mr. Anderson kept two paraffin lamps going night and day during the severe winter through which we have passed, and which did the work effectually. Grapes look tempting at any time, but in artificial light, suspended from so many Moselle bottles, the effect was indeed charming.—JAMES ANDERSON, Meadowbank Nurseries, Uddingstone, N.B.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

MARCH 11.

THE most striking features on this occasion were the grand banks of Cyclamens supplied by some of the best growers of that flower, and attractive groups of plants from some of the principal London nurseries. The conservatory, too, in which the show was held, was in itself very attractive, many of the plants which it contained being finely in flower.

First-class Certificates.—These were awarded as follows:—

***Ipsaea speciosa* (Philbrick).**—A terrestrial Orchid, with beautiful, waxy, lemon-coloured flowers, delicately scented.

***Amaryllis Virgil* (Veitch & Sons).**—A white, crimson-streaked kind with very broad, well shaped, recurved petals, evidently the forerunner of a fine breed of Amaryllises.

***Azalea Empress of India* (Van Geert).**—A dwarf, free-flowering kind valuable for decorative purposes, the flowers being large, semi-double, and bright pink in colour, blotched with purple.

***Cymbidium Lowianum* (Low & Co.).**—A kind resembling *C. giganteum*, having long, graceful flower-spikes, and large, greenish-yellow, wax-like flowers, having a rich velvety crimson lip.

***Cyclamen persicum picturatum* (H. B. Smith).**—A variety with mottled leaves, and very large flowers with white, rose-edged petals purple at the base.

***Cyclamen Crimson King* (H. B. Smith).**—A sort dwarf in habit, bearing fine broad-petalled flowers of a deep crimson colour.

***Davallia Mariasi* (Veitch & Sons).**—A dwarf species, with finely cut leaf-like pinnae, and well adapted for pan or basket culture.

Medals were awarded as follows:

To Sir Trevor Lawrence for a group of Orchids, small Banksian. To Mr. Bull for a collection of new and rare plants, silver-gilt Banksian. To Mr. B. S. Williams and Messrs. Osborn & Sons for miscellaneous groups of plants, silver Banksian. To Mr. H. B. Smith, Ealing, for a group of Cyclamens, large gold Banksian. To Mr. Edmonds for Cyclamens, silver-gilt Banksian. To Mr. Clarke, Twickenham, for Cyclamens, silver Banksian; and to Mr. Ford, for Apples, silver Knightian medal.

Groups of Plants.—From Messrs. Veitch & Sons, Chelsea, came an attractive group of plants, consisting of finely-berried standard and bush Aucubas, new and rare Amaryllises, Cyclamens, and Primulas, backed up by Palms, and other fine-foliated plants. In this group was also a hybrid Cattleya (*C. Veitchii*), the result of a cross between *C. labiata* and *C. crispata*; it has a delicate violet-coloured flower, having a rich claret-coloured lip. *Camellia reticulata* fl. pl. from the same firm, was noticeable on account of its distinct character, its flowers being stiff and waxy, and of a deep rosy-carmine colour. Mr. Ball exhibited a miscellaneous group of new and rare plants, amongst which were well-grown graceful specimens of the arching-leaved, finely-striped *Carallio recurvata variegata*, the twining-stemmed *Philodendron gloriosum*, no less *Cycas* and *Palms*, *Dracenas*, and Orchids. Mr. B. S. Williams contributed an effective group of plants, consisting of finely-berried Aucubas, several new Amaryllises and Primulas, including pansful of *P. denticulata*,

associated with which were finely-flowered examples of *Dendrobium Wardianum*, *Odontoglossum Alexandræ*, and *Lady's-slippers*. Messrs. Osborn & Sons, Fulham, exhibited an attractive group of plants, amongst which were well-flowered *Rhododendrons*, *Amaryllises*, *Deutzias*, *Spiræas*, *Abutilons*, and *Azaleas*, the whole being relieved by Palms, Ferns, and other fine-leaved plants.

One of the finest collections of Orchids ever exhibited at these meetings was one shown on this occasion by Mr. Spyers, gardener to Sir Trevor Lawrence. They were both unusually well grown and profusely bloomed. Amongst them were fine varieties of *Dendrobium Wardianum* and *D. crassinode*, having hundreds of large, finely-formed blossoms; *D. nobile*, masses of blossom, and the pretty primrose-coloured *D. luteolum*, grown on a wooden raft, profusely laden with flowers. With these came a well-grown specimen of *Cymbidium eburneum*, bearing eight ivory like flowers and four buds; *Lady's Slipper*, of various sorts; finely-flowered specimens of *Odontoglossum Alexandræ*, bearing graceful spikes of large blossom beautifully spotted; *D. nebulosum pardinum*, a kind generally admired on account of its large, waxy, brown-spotted flowers; and the brilliant orange-coloured *Lælia harpyllia*, and some fine examples of *Phalenopsis*. Mr. Benham, gardener to Earl of Stradbroke, Benham Hall, exhibited four finely-flowered plants of *Phalenopsis Schilleriana*, bearing collectively between two and three hundred blossoms. Mr. Cannell, of Swanley, again sent a magnificent stand of blossoms of *Zonal Pelargonium*, the flowers being of unusual brilliancy and the flowers of superior form. The best kinds were Kleon, dark scarlet; Mrs. Leaver's, rose; Henry Jacoby, crimson; Lizzie Brooks, lively scarlet, very large; and White Vesuvius. A grand bank of Cyclamens, made up of finely grown plants, was contributed by Mr. G. B. Smith, of Ealing, Mr. Edmonds, of Hillingdon, and Mr. Clarke, of Twickenham. Mr. Smith's collection was remarkable for the excellence of the white-flowered kinds; Mr. Edmond's had very large flowers; and Mr. Clarke, blooms possessing colours seldom seen in Cyclamens.

Miscellaneous Subjects.—Messrs. William Paul and Sons, Waltham Cross, exhibited an extensive collection of cut blossoms of Camellias, consisting of nearly fifty of the best known kinds, including finely developed blossoms of *Fimbriata*, *Imbricata*, the fine, red, wax-like *Mathotiana*, and the pretty pink white striped *Madame de Strehliff*; also *Beauty of Hornay*, *La Reine*, and others. A few Japanese Primulas having flowers with distinct colours, came from the Society's Gardens at Chiswick; also well-flowered plants of *Imantophyllum miniatum*. New Primulas of the denticulata type were also shown by Mr. Ware, of Tottenham. Messrs. Veitch and Sons contributed a basketful of plants of a new *Dracena*, from the South Sea Islands, named *D. Princess Marguerite*. It is compact in habit, and its leaves are of a glistening cream colour, and sometimes striped with green and rose. Mr. James, Isleworth, showed blossoms of *Cinerarias* of great excellence; and Mr. Bland, Cranbourne Court, sent a basketful of finely-flowered *Neapolitan Violets*. Mr. Ball showed *Nephrrolepis ensifolia*, *Adiantum bellum*, and *Pteris umbrosa cristata*. Mr. Paul furnished a bushy, glossy-leaved, white-flowered Camellia, named *Niña Egeria*, which was much admired; and Messrs. Osborn exhibited a good yellow-flowered *Abutilon*, named *Yellow Prince*. Mr. Cannell sent cut sprays of *Fuchsia splendens*, in good condition; also plants of *Ageratum*, Cannell's dwarf. Mr. Buchan, Wilton House, Southampton, sent a flowering plant of *Maxillaria Harrisonii Buchaniana*; also fine varieties of *Odontoglossum Andersonianum*, and *O. Alexandræ*. The last-named Orchid also came from Mr. Green, gardener to Sir J. Macleay, who likewise showed a bloom of *Vanda Cathartica*, which had been cut from the plant three weeks, and which was still in good condition.

Fruit and Vegetables.—One of the finest collections of Apples perhaps ever shown at this season of the year was exhibited at this meeting by Mr. Sidney Ford, gardener to W. E. Hubbard, Esq., Leonard's Lee, Hammersmith. It consisted of fifty dishes of plump, sound, highly-coloured fruit. Among the best may be mentioned *Wadhurst Pippin*, *Poor Man's Profit*, *Alfriston*, *Northern Greening*, *Norfolk Beefing*, *Blenheim Orange*, *Ribston Pippin*, *Golden Reinette*, *Pronger's Seedling*, and *Sheep's Nose*. Mr. Divers, Maidstone, also sent several good dishes of Apples, and Mr. L. Killick, of Lungleigh, showed a collection of Potatoes of fine quality. Messrs. Sutton & Sons contributed several kinds of Rhubarb.

***Erica propendens tubiflora*.**—This ranks amongst the prettiest of soft-wooded Heaths, and is one which deserves a place in every collection. It flowers profusely, in habit it is compact, and the whole appearance of the plant when in bloom is most satisfactory. Were I limited to three kinds of soft-wooded Heaths, I would choose *Erica byrnalis*, *gracilis*, and the variety under notice. Heaths are and have for some years past been as it were under a cloud, their decorative value not being so fully appreciated as formerly. Although not quite so easily and quickly grown as the majority of those plants which are relied upon for conservatory and window decoration, they are by no means difficult to grow. If cut back and potted early in good fibrous peat, placed in cold frames, and from thence set out in the full sun, they will form useful bushy little specimens, and the soft neutral tints which many of them display, render them valuable for associating with shades of colour of a more glaring and pronounced character.—J. C. B. Juffe.

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SATURDAY, MARCH 22, 1879.

Vol. XV.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—Shakespeare.

CAMELLIA HOUSES.

IN most gardens of considerable size there are glass houses for special purposes; as, for instance, the Rose house, the Heath house, Orangery; but seldom in private places does one meet with a house devoted to Camellias, and yet those who have seen Camellias in anything like perfection, must admit that no plants are more worthy of a structure specially devoted to them. Such houses, for example, as the Camellia house at Bicton, that at the nurseries of Messrs. Pince and Co., of Exeter; the front corridor of the Messrs. Veitch's nursery at Chelsea, or the Camellia house at the late Mr. Martin's place near Kingston, and many others, are sights to be seen, perhaps, but once, but to be remembered for a lifetime. Nor is it necessary to have a very large or lofty house for Camellias. Common lean-to greenhouses may be made to look well by furnishing their back walls, and planting them with a descending series of plants of shorter stature down to the front path. Common span-roofed houses look best with a bed of tall plants in the centre, and shorter ones in the side borders. Camellias, also, thrive admirably in large architectural houses, many of which are so heavy and semi-opaque, as to prove the graves of numbers of valuable plants of other kinds. The Camellia does admirably with less light than almost any other plants, and one of the greatest improvements that could be effected in not a few gardens, would be the clearing out of mixed collections of plants from architectural conservatories, and the furnishing of such wholly with Camellias. As evergreens they rank amongst the handsomest, while not even the Rose can excel them in richness of colour or in perfection of form. Individual plants in pots or single blossoms are extremely rich and beautiful, but housefuls of Camellias reaching to the stature of trees and spreading out to the circumference of Portugal Laurel, are magnificent beyond all other plants with the exception of Rhododendrons. And, fortunately, Camellias are much easier grown successfully out of pots than in them. With thorough drainage, and almost any proportionate mixture of peat and loam, or a bed of good peat or good loam, Camellias planted out are almost sure to succeed. The roots in pots get cramped and starved, or sodden; but, planted out, they have a free root run, increase and multiply faster, and continue in more robust health in consequence. In fact, no plants are more easily kept in health and in free-flowering condition than Camellias planted out under glass.

After flowering is the best time to prune them, if they need it; and no plants pay better for skilful treatment than these. The late Mr. James Barnes used to cut in the fine plants at Bicton rather severely every year; this kept them at home, as it is called, and caused them to break well back, so that almost every plant was a perfect specimen, clothed with foliage, branches, and flowers from base to summit. After pruning is also the most convenient time to dress with some fresh soil, if the plants seem to require it. This will not generally be oftener than once in three years, and the surface dressing should be put firmly on the old soil so as to encourage the roots up into it. Loose dressings prove injurious by concealing the state of the borders, and the roots also refuse to strike freely into them.

It is almost impossible to overwater Camellias during their growing period, provided the borders or beds are thoroughly drained, which is essential to success. Manure water may also be freely used at this stage if the plants be at all weakly; the tops should also be freely syringed at least twice a day, and, unless the house has a northern or eastern aspect, the roof should be shaded from, say, 11 till 2 o'clock during the growing period, should the weather prove bright and hot. As the growth gets nearly finished and the buds begin to show, cooler and drier treatment should be adopted until the houses are either unroofed for a month or two in July, August, or September, or

the ventilators and door must be all left open night and day. The transition from the open state to the closer one of flowering in the autumn must be made skilfully, a step, as it were, at a time; otherwise, the buds are apt to drop. The best time to plant out Camellias is in February or March, just as the plants go out of flower and are starting into fresh growth. As much of the old soil should be removed from the old balls, and as many of the roots should be unravelled, as possible. It is seldom, however, that many of the latter can be undone without wounding or breaking them; if only a few can be directed out from the ball, this will generally be all that is practicable. The soil must be placed up firmly against these, and the old balls. This is a work of some delicacy and difficulty, for unless the new soil be brought up tightly against the old balls, the water passes by, not through, the latter, and the plants may die of thirst, while the new soil is saturated with water close to the dry ball. On the other hand, the projecting roots are apt to be bruised and broken in the necessary consolidation of the soil. After planting, it is good practice to give the plants a good watering; this effects a closer union between the old roots and balls and the rich compost than any amount of mere mechanical consolidation can accomplish, and enables the roots to strike away at once into their own root runs. As there must necessarily be considerable reduction and disturbance of the roots through planting out, it is well to reduce the tops at the same time by the removal of any unshapely or unhealthy branches. By maintaining a semi-saturated atmosphere for a time, and also shading overhead, should the weather prove bright, the plants will speedily start into vigorous growth and thoroughly establish themselves in their new quarters, frequently making more growth the first season of their being planted out than they have done several years previously.

D. T. FISH.

Hardwicke House, Bury St. Edmunds.

CAMELLIAS PLANTED OUT.

WHERE there is convenience for planting out Camellias, there can be no question that they not only grow more freely than when grown in pots or tubs, but they also produce a greater quantity of flowers; yet it is not well, even where a suitable house exists for planting them out, to treat in that way more than part of the stock, for the reason that there is no means of controlling the time of flowering, either by hastening or retarding the bloom of any portion in a way that can so easily be done with plants that are movable from one structure to another; but in most gardens where there are more than a very few glass houses, space may be found to turn out some of the plants. In the case of any that have been for a considerable time in pots, it becomes necessary to some extent to disturb the ball, with a view to a partial loosening of the roots in planting. Twice in the year can this operation be performed with less interference with the growth and flowering capabilities of the plant than at other times—that is, now, before much growth has commenced, and after the season's shoot extension is completed and the buds about forming. If the disturbance of the roots, already alluded to, take place later in spring, when the principal portion of the plants are just about commencing to grow, it will check them severely; and if left until the autumn, when the buds have attained any size, it is almost certain to cause their falling off; consequently, if planting out is to take place before growth is made, there should now be no delay. The bed to be occupied by the roots ought to be of sufficient depth to admit of 6 in. of drainage material, which may consist of broken bricks, or anything of a like character, reduced to pieces 1 in. or 2 in. in diameter, over which it will be well to lay a thin turf to keep the fine particles of soil from settling down amongst the drainage, similar to the usual course followed in making a Vine border. Above this there should be depth enough to have 2 in. or 3 in. of new soil beneath the roots, and to allow the balls to be sunk 2 in. or 3 in. below the surrounding soil of the surface of the bed when rammed quite solid round the plants so turned out; this is necessary to prevent the roots getting dry, by the water, when applied, percolating through the new material in a way that would leave the ball dry; to further

prevent this, it will be well to perforate the undisturbed part of the ball with an iron skewer. It is requisite to impress the necessity of these precautions on those who may not have had experience in the planting out of Camellias, from the liability there is of the soil occupied by the roots that have not been disturbed, getting dry; when this occurs, and whilst it remains in that state, the plants can never make satisfactory growth. Turning out of the pots in this manner may, with advantage, be practised upon specimens, the branches of which have got into a thin straggling condition, as, when the roots that have thus unobstructed room to spread have attained strength, the plants will generally be found to push out quantities of young shoots from the old wood. I should, however, by no means recommend the branches being cut in, however loose and thin they are, until a season has elapsed after they have thus broken freely; for, where the unavoidable disturbance of the roots takes place, and there is a reduction of the leaf surface by pruning as well, the simultaneous check becomes so severe that plants in not over vigorous condition take a long time to recover. For back walls in lean-to or hip-roofed houses, or where there happens to be an end wall to a span-roofed house, there are few more desirable plants than Camellias, if there is root room available for planting them out. Their handsome ever-green foliage affords an agreeable covering for the walls, in addition to the flowers they produce, and the free growth that is usually made, consequent upon their extended root development, enables them to cover a considerable space in little time.

T. B.

Soil for Camellias.—It is frequently urged that Camellias require peat and other ingredients almost out of the reach of ordinary cultivators. That they will grow in peat we all know, but its quality varies so much that the majority of growers would do better when making a bed or border for them to form it as they would a Vine border, simply omitting all noxious rank manures and relying on a top spit of an old pasture to supply nourishment. This would maintain healthy growth longer than any kind of compost ever put together. A little dry cow or sheep manure or sand if the soil be deficient in that respect, might be added with advantage. If at any time the plants need stimulating, liquid manure or a rich top-dressing keeps all going on satisfactorily. This is the best season for planting Camellias, and I would recommend any one having plants in an unsatisfactory condition to plant a portion of them out-of-doors, not under the shade or drip of trees, but where they would be subjected to moderate exposure, *i.e.*, where the force of cutting winds would be moderated by trees or shrubs or buildings. Our most flourishing beds of them are on Grass in openings in the Pinetum and pleasure grounds, where dense specimen Conifers grow in luxuriance without shading them. Camellias out-of-doors, though perfectly hardy, will never supply the place of those under glass, as spring frosts are so liable to damage their flowers. Under glass they are the very best winter flowering plants which we have. Their season of flowering too may be lengthened by having plants that mature their growth early and that begin to expand their blooms before winter sets in. This a continuous succession may be maintained all through the dull months until Roses are abundant.—J. GROOM.

Is it Necessary to thin Camellia Buds?—This is an important question, inasmuch as it just determines whether the grower shall have two blooms, or even more, in place of one. Thinning the buds out, when there are more than one or two, at the points of the shoots, to one only, is generally recommended and practised, on the plea that, if all were left, it would exhaust the tree, and impede the perfect development of the flowers generally. The entire wisdom of the practice I have, however, often doubted; and, when I have followed it in any instance, I must confess it has been with reluctance, and not with a conviction that I was doing much good. Consequently, I have not been very particular in lessening our supply of Camellias by robbing the plants of their buds. A fine plant of the old double white has these two years been allowed to carry as many blooms as it produced, and it shows no signs whatever of distress; and the same applies to other sorts that have been similarly treated for a considerably longer period. The old double white mentioned had hundreds of buds upon it; but if I had thinned them out to the best and largest, the most of them would have been over by this time, as they began to expand at the beginning of December. As it is, there are some hundreds of later buds to come on yet; for it is very rarely that two blooms of the double white expand at the same time on the same shoot. As soon as one is out, the next most advanced comes more quickly, and so on with the third. I doubt

if the mere act of flowering exhausts a plant in the least, though I am aware it is a theory with Chrysanthemum growers that thinning the buds of their plants makes those left grow larger. Probably however, it is the extra freedom and room which permits their full development. One never sees Vines distressed by flowering, nor yet by the swelling of the berries up to the stoning period; and then comes a sensible pause in the production of wood growth, which is less vigorous. Of course, it is well known that the energies of all plants are most taxed when they begin to form and mature their seeds. In the case of the Vine, I have never had reason to think that the plant felt the strain before the berries began to stone. Up to that point the green berries seemed to act the part of leaves, and to be agents of elaboration. And it appears to be much the same with the Camellia; if it be not permitted to produce seed, it is not very material how many flowers it is allowed to produce.—C.

Camellia Sports.—I send you two Camellias gathered from the same plant. The original plant is the *alba plena*, or double white; it has been in my possession six or eight years, and is about 4 ft. high. There has been nothing particular in the buds or flowers until last year, when I observed on one branch a flower slightly tinged with pink. This year the branch is producing blossoms of a beautiful rosy-pink, with a pale stripe in the middle of each petal. I send you a bloom, and also a white flower from the opposite side of the tree. Can you suggest any means by which I can secure a reproduction of these pink blooms? Can it be done by inarching on another tree? or would you advise cuttings being struck? I cannot decide whether this pink variety is a true sport, or whether the original stock on which the *alba plena* may have been grafted has influenced this particular branch.—W. N., Newark. [It seems to be a sport, and a very pretty one both as regards form and colour. You may secure it by inarching now on a healthy young Camellia, or you may graft it or strike cuttings of it in the autumn.—M.]

ON CROSSING THE AURICULA.

ONE most favourable evidence of the strength and intensity of the Auricula revival, is found in the activity shown by some of our cultivators in the way of producing new varieties of this glorious spring flower. Mr. C. Turner, Slough; the Rev. F. D. Horner, Kirby Malsard; Mr. B. Simonite, Sheffield; Mr. E. Pohlman, Halifax; Mr. J. Douglas, Loxford Hall; Mr. John Read, Market Rasen, and others, are working patiently and systematically in this direction, and with cheering results. In a communication received from Mr. Read the other day he gave me an interesting account of his method of crossing the Auricula, which is worthy of publication as a contribution to floricultural science. In all his crosses Mr. Read almost invariably selects two varieties of the same class, as green-edged, white-edged, grey-edged, or selfs, taking care that the flowers are at the same stage of maturity in the pip as possible, choosing the seed-bearing parent for form, and the pollen parent for colour. As soon as the pips to be operated on had partially expanded, so as to enable Mr. Read to see into the tube and notice that the anthers had not burst, he takes a pair of small-pointed scissors, and with these cuts away the pips just below the anthers, being careful not to injure the stigma with the scissors; there is then no danger either of self-fertilisation or of being crossed by insects, as they will not approach a mutilated flower. When the flowers of the pollen-bearing plant expand and the anthers are in that powdered condition suggestive of being in a state of fitness for the operation, advantage is taken of a fine sunny morning to examine the stigma of the prepared pip, which will most probably be in a fit state to receive the pollen, and will present quite a viscid appearance on the summit; a camel's-hair pencil is employed, and being first drawn to a point by placing it in the operator's mouth, it is then used to collect a portion of pollen from an anther of the flower to be used in this way, and it is then inserted in the mutilated tube, scattering the pollen on the stigma in the act, to which it will adhere, repeating the operation to make the work doubly sure; and if the day chosen for the purpose be fine and warm, the operator will soon perceive the effect produced on the stigma. If several different crosses are to be made, it will be necessary to wash off any remaining pollen from the brush after each attempt; and, remarks Mr. Read, "I merely draw the brush through my mouth for the purpose; this is my invariable practice, and it was also the practice of my late floral friend, John Cunningham, &c.,

the raiser of John Waterson, grey edge; Mrs. Campbell, white edge; Peter Campbell, Tam O'Shanter and Souther Johnnie, green edges." When setting down the foregoing notes, Mr. Read also remarked, "I have now fine pods of seed on Headly's George Lightbody crossed with Lancashire Hero; True Briton and Earl Grosvenor crossed with my seedling Regularity; Lancashire Hero crossed with Colonel Taylor; and Pizarro crossed with Lord Lorne. From these crosses I fully expect something worth looking at." Mr. Read has very kindly sent me a few of his seedling Auriculas to flower, and also a few of his seedling gold-laced Polyanthus; of the latter he has been a grower for many years, but has parted with his named flowers, leaving himself only some seedlings from good crosses. Let us hope they will emulate in quality and usefulness some of his new Auriculas.

R. D.

FUCHSIA SPLENDENS.

This is one of the most beautiful of Fuchsias for winter flowering. It strikes readily from cuttings at all times of the year, and, in addition to its being useful for pot culture, it forms one of the best of plants for growing in baskets. It is well man-



Fuchsia splendens.

aged in Mr. Cannell's nursery at Swanley, where it is now finely in flower, and from whence sprays were furnished for which our illustration was prepared.

C. S.

FUCHSIAS IN SMALL POTS.

How seldom do we see Fuchsias grown well in private gardens in small pots, and yet they are plants well adapted for growing in that way. The pots generally selected for market Fuchsias are 5 in. ones, and the result is surprising to those who have not experienced what can be done with them under such conditions. I feel sure that if lovers of flowers generally knew how effective Fuchsias are for all decorative purposes, and how easily they may be had in bloom almost the whole year round, much more attention would be paid to their culture in small pots than is now given them. Briefly, then, I will endeavour to describe the treatment which I have found

from considerable practice to produce the best results. Let us suppose that the first batch of plants are required to bloom in perfection in March, at which time they form most beautiful objects to mix with spring flowers in the conservatory or for table decoration. The kinds which I have found best adapted for early flowering are Mrs. Marshall and War Eagle. The cuttings for this purpose should be struck in the preceding August. Their mode of propagation is so simple and well known as to need no description here. They will succeed in any close shady frame or hand-light. When sufficiently rooted, which should be in a very short time, pot them off singly into thumb pots, in a mixture of loam and leaf soil, with plenty of silver sand, replace them in a frame, and shade for a few days. After this they will bear full exposure to light and air, but be sure that they never in any way suffer from want of water, as the object in view is to secure bushy plants, with green foliage to the rim of the pot.

As soon as they have grown to the height of about 3 in. pinch off their points, which will induce them to break freely. Keep them well syringed and free from all insect pests. Washing with Tobacco water is best for the destruction of green fly, as fumigation, if ever so carefully done, is apt to cause the loss of the foliage. As soon as they are well rooted, shift again into 3 in. pots; and if a cold pit be available, with coal ashes to place them on, then this is the place of all others in which to grow them well. The lights can be moved off altogether at night in favourable weather, as they greatly enjoy the dew. When the shoots have broken well, and grown an inch or two, stop them again, so as to induce them to form compact little bushes. By the end of September they will be ready for their final shift into 5 in. pots, using, in place of leaf soil, about one-third part of decayed manure. Drain the pots well with small pieces of potsherds, and press the soil moderately firm; replace the plants in the pit, and continue the syringe on all fine warm days, with strict attention to watering, stopping, and cleanliness. About the middle of October they should be removed to their winter quarters. The best form of structure for them is a span-roofed house, with a path down the centre, and side beds with, if possible, a covering of small ballast or Cocoa-nut fibre on which to place the pots. They greatly enjoy the cool moisture arising from these and similar materials, and it also avoids too frequent a use of the watering pot. The temperature of the house should range from 50° at night to about 60° in the day, according to external circumstances. This will be a safe guide for the winter months, the object being to keep the plants growing slowly the whole time; if they once get stunted in small pots they lose their foliage, and become comparatively worthless. They should receive their final stopping at the end of December; the points of the shoots thus taken off make excellent cuttings; they strike freely in a Vinery or any house in which there is heat, and will follow the earliest plants up well, requiring treatment in all respects similar; only, as they will have the advantage of increasing daylight to grow in, they may be kept warmer; and, indeed, the quicker they are grown the finer will be both flowers and foliage.

It is well at this season to have a few old plants of the best summer-flowering varieties to put into heat, from which to obtain a supply of cuttings. After this the latter can always be obtained from the stoppings of young plants. I would also recommend a batch of cuttings to be put in, according to requirements, every month until September; by so doing a good supply of fresh blooming plants can be had from March to December. But to return to the early plants; these we will suppose are finally pinched in, and are, as they should be, bushes about 6 in. or 8 in. high from the pot. Increase the temperature with the lengthening days, and maintain a free, moist atmosphere; now a little weak manure water may be given with advantage. There is nothing whatever better for this purpose than clear, weak soot water. Be careful in ventilating to avoid all cold draughts of air; this is a fertile source of mischief to the foliage, which, if taken proper care of, is of so much beauty and importance. By the first week in February the plants will require tying into shape; this can best be done by placing one strong stick in the centre of the pot and tying the shoots to it, so as to form little pyramids. They will require frequent attention to this matter. As the bloom buds make

their appearance, manure water may be given more frequently, and they should be well washed with Tobacco water before opening their flowers, taking care to syringe well with clean, soft, warm water, next day, so that no stains may be left on the petals. On bright days shading for a few hours will be useful.

Let us suppose that we are now in March; our plants, if all has gone well, will be compact little specimens 18 in. to 2 ft. in height, and about 1 ft. through, and loaded with fine large flowers and deep green shining leaves, than which nothing can be more ornamental. All the attention which they now require is abundance of water until they fade and the younger plants take their place, when the old ones can be thrown away, or, if desired, a few can be kept to form large specimens. With the culture of these last-named, however, I do not intend to deal; my object is simply to direct attention to the merits of the plants as a quickly-grown object of great beauty in small pots, and withal so easy to manage as to be within the means of everybody. I do not give a list of varieties, as almost all the really good kinds are amenable to one system of treatment. I may, however, add that kinds having the stiff, branching habit of *Lady Heytesbury* do best without stopping, as they form naturally a well-furnished plant, of course with the support of one stake. The two early kinds which I have named are the best for late autumn as well as spring work. In conclusion, I will say that I feel sure, if the few simple rules which I have given for the growth of small specimens of this charming plant be carried out, the result cannot fail to give much gratification to the grower.

H. BAILEY.

GROWING PLANTS IN FRUIT HOUSES.

ALLOW me to state, in compliance with "M. F.'s" request (p. 190), how I manage to have *Linum trigynum*, *Sericographis Ghiesbreghtiana*, and *Schizanthus papilionaceus* in full flower during the winter. We start with a few of the *Linum* in the spring by shortening all the shoots back as soon as the plants have done blooming, after which they are placed in any forcing house or pit where they can get a little moist heat to give them a start, with a view to supplying us with a sufficiency of cuttings. These are taken off with a heel, that is, with a portion of the old bark at the base, when they are about 3 in. long, and are then inserted in sandy soil and placed either under a bell glass or in a propagating box where there is plenty of atmospheric moisture till they strike root. This they do in the course of a fortnight or three weeks, when they are ready for potting, which is done in soil consisting principally of loose fibry peat or leaf mould, *Linums* being plants that like vegetable matter in which they can ramify freely. When potted off they are replaced in a similar situation to that which they had before the cuttings are taken till they push again, which brings them to the end of May or the beginning of June, and after that they go into any cold frame or pit that happens to be at liberty, to be kept therein and grown on during the summer. To keep them clean and healthy during that season I always make a point of having some kind of plunging material such as half-decomposed leaves or tan that I can put the pots in, thus keeping an equable degree of moisture about the roots. The heavy syringings they receive keep the air moist, the object being to keep them free from red spider, their great enemy—a difficult task to manage when treated in any other way. Isolated as we have them, and under so much control, it is very rare that the above-named pest puts in an appearance, but should it do so at any time we at once resort to sulphur, which we first mix as a paste and then stir it up in some water kept agitated while syringing it on. To be effectual, however, the under and upper sides of the leaves must both be thoroughly wetted, and the frame shut up early every afternoon, so as to raise the temperature to nearly 90°; before doing which the walls and other surfaces should be wetted, that the air may be saturated with moisture. This treatment continued for a week or so generally has the desired effect, and the sulphur is then washed off by giving a good drenching, either by means of the garden engine or syringe, and after this is done, the latter instrument is used freely every day both morning and evening, before opening or shutting them up.

This regular and continuous wetting of the foliage is the main secret of success in growing fine healthy *Linums*, for do what one will, without it it is impossible to have them in the condition they should be. In the majority of cases, under different treatment, they become partly defoliated, showing gaunt, bare stems, and what few leaves they have towards the tops of the shoots are invariably discoloured, giving the whole plant a wretched, woe-begone appearance. Besides being such moisture-loving subjects, both at the roots and top when growing freely, with the heat they get by shutting them up early during the summer, they also require shade during the heat of the day, which should be afforded by drawing a piece of tiffany, canvas, or any thin, light material of that kind over the frame, removing the same at the time of closing, or whenever the sun goes in, so as to keep the foliage as stout in texture as possible. The greater part of our plants are in 6-in. and 8-in. pots, a size quite large enough to grow fine specimens with the help of a little weak manure water given towards the autumn, and afterwards when carrying their bloom. If we wish for a few large bushes, we obtain them by keeping some of the best and most shapely of those cut back, which are potted on and treated in the same way as the others. The habit of *Linums* is naturally shrubby, but, in order to make them more shapely, it is sometimes necessary to stop the leading shoots, which causes them to break again and keep well furnished below. In potting, we give free drainage, and use soil composed of either refuse, peat, or leaf-mould and fibry loam in the proportion of about two parts of the first named to one part of the latter, with just a sufficiency of sand to keep the whole open and porous. By the end of September or early in October they are removed to a house, and, during winter, kept in a temperature never lower than about 45°, in which they unfold their flowers in the greatest profusion.

As regards the *Schizanthus papilionaceus*, the seed for winter blooming is sown in August, and the plants pricked off and grown on, three in a 6-in. pot, in any cold frame till late in the autumn, when they are placed on any light, airy shelf near the glass till they begin to show blossom. This prevents them from becoming drawn up, to which, in the absence of sun they have a strong tendency. Like all, or most annuals, they are fond of rich soil, and succeed best in that which is light, if potted somewhat firmly, and with good drainage bear liquid manure and plenty of water, after they become fully established. To have plants to come in at this season or a little earlier, it is necessary to sow again at the end of September, and grow the same on in slight heat till forward enough for the greenhouse, in which they stand well in a temperature anywhere about 50°. There is another annual I can specially recommend, that is most valuable for cutting to work up in choice bouquets or embellish vases, as it is not only lasting but is very choice and suitable in size and colour, the individual blooms having much the shape and appearance of those of the *Forget-me-not*, and having a deeper blue shade that is very telling when associated with those of a paler hue. The name of the plant just referred to is *Browallia elata*, and there is a larger variety, *B. Roezli*, that is even more desirable, both of which require the same treatment as that recommended for the *Schizanthus*, when, if so favoured, they will be found to keep up quite a display for several months in succession.

In propagating the *Sericographis Ghiesbreghtiana* we always make choice of the tips of the shoots taken from the old plants before cutting them down, as, being shorter-jointed than others that form afterwards, they make the closest and best specimens. At this time of year the tender young points are very liable to green fly, and therefore, previous to putting the cuttings in, they should be examined, and if found to be infested with these parasites, dipped in Tobacco water, otherwise the leaves get criddled just as they begin to unfold. Any hotbed or close place where a *Verbena* will strike suits the *Sericographis*, as it is remarkably free rooting, and when potted off does well for a time on the shelves of a Vinery or Peach house till the weather becomes warm enough for growing it on in cold frames. This is generally the case early in June, after which, if plunged in a bed of leaves and tan, and kept duly watered and syringed before closing, their growth is rapid and the shoots of that firm character that always produces a great

quantity of bloom. Except on sunny days, and during just the height of summer plants of *Serico-graphis* do not require shade, unless after being repotted or disturbed at the roots, when, if they show symptoms of flagging, it will be advisable to screen them for an hour or two till they again get a fair start. Although they grow in almost anything, sandy peat suits them best, but failing this, leaf-soil and loam answer very well, used in about the proportion of two-thirds of the former to one of the latter, in which they require to be potted somewhat firmly. The best place in which to winter the plants till they come into flower is an intermediate house, where they can be placed so as to have plenty of light, and the full benefit of all the sun we then get, which helps to colour the bloom, and adds to its texture and substance. When removed to the lower temperature of the greenhouse, it is important that the plants be kept as dry at the roots as they will stand without suffering, for, although they will bear a good deal of hardship, cold and wet are very trying, and apt to cause the flowers to fall. In case of mealy bug assailing them, we lay the pots on their sides, and syringe the shoots and leaves with paraffin and water, using a wine-glass of the former in a four-gallon pot. This remedy is much easier and far more effectual than hand-washing, for however carefully that may be done, it is never thorough in its cleansing, being sure to leave some for stock. S. D.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Pink Lady Blanche.—This is a free-blooming Pink, and one very valuable for forcing; it is easily grown and useful in the conservatory, as well as for cutting for bouquets, white flowers being always in request. The blooms, too, do not burst like those of other varieties. My mode of culture is as follows: About the end of the present month, or as soon as there are plenty of cuttings, which there will be if the plants have been forced on in a little heat, I insert them in the same way as I do those of *Verbenas*; I plunge the pots in a gentle bottom heat under a hand-light, or place a square of glass over the pot, shading them when the sun is very powerful; when well rooted, I gradually harden them off. About the end of April I plant them out about 10 in. apart in good soil, and if it contains 2 in. or 3 in. of loam, all the better; during the summer they will take care of themselves. About the middle of October they will require to be potted in 5 in. pots, and kept in a cold frame through the winter, or till they are required for forcing.—W. G.

Oak-leaf and other Pelargoniums.—I have the Fair Helen, Oak-leaved glutinous sort, Lemon and Citron (I think it is) scented, also another scented like camphor or something of that character.—M. GILLUM, *Red House, East Moulsey.*

Ivy-leaved Pelargoniums.—There is now such a diversity in the colours and character of the Ivy-leaved Pelargoniums that cultivators of all classes will increase the attractiveness of their conservatories by giving them more attention. For filling baskets and trailing over the edges of vases, rustic and otherwise, they possess merits of a high order, and these merits are generally recognised; but their value for specimen culture, and for decorative purposes in semi-specimen form, does not appear to be sufficiently known. Specimens of the Ivy-leaved varieties are exceedingly attractive, and their production is very simple, as you have only to put them in 8 in. pots, three thrifty examples in each, and then train the shoots to a neat trellis of wire, or neat stakes. Well draining the pots, by placing about 2 in. of potsherds in the bottom, may be regarded as a matter of course, and the plants must be placed at regular distances apart, with just sufficient soil underneath to raise the surface of the ball to within about 1 in. of the rim. The next step will be to fill the space between the balls with the prepared compost, and to be careful to press it somewhat firmly. The trellises should be securely fixed in their places when the potting is completed, so that the training may be done immediately afterwards. Balloon and barrel-shaped trellises are perhaps the best, and they ought not to be too large, as it is most important they should be well covered. Those 2 ft. high and 18 in. in diameter, or thereabouts, will be the most suitable. For decorative purposes they should be grown in 6 in. pots, one plant in each, and trained to a single stake. When loosely trained in this way, with the lateral growth hanging down in a natural manner, they are surprisingly beautiful. The stakes, it may be added, should be about 18 in. in height. All the varieties are more or less suitable for culture as here recommended, but those who do not want a large number will not wisely if they select *Lucie Lemoine*, *La Fiancée*, *König Albert*, *Progress*, *Argus*, and *Bridal Wreath*.—"Gardeners Magazine."

TREES, SHRUBS & WOODLANDS.

A FEW GOOD WEEPING TREES.

GREAT attention is paid to the propagation and training of trees of a weeping character in the United States of America and also in Canada, and more particularly in the province of Ontario. One of the most extensively cultivated is the Weeping Birch, sometimes called the Lady Birch. This tree has a very light-coloured bark, and graceful branches, which are swayed to and fro by the slightest breeze. It was introduced into the province by Messrs. Ellwanger and Barry, in the year 1851. Its home appears to have been in Germany, for a correspondent of the "Horticulturist," writing from thence in 1848, speaks as follows concerning a specimen which he had seen in Booth's nursery at Holstein:—"It had descending shoots 32 ft. long. The branches hung as perpendicularly as those of the Weeping Sophora, or the common Weeping Willow, and they are quite as delicate and pensive as the latter." Once introduced, this tree was eagerly sought after, and in a very short time from 5,000 to 15,000 stocks were budded with it annually. The original tree was cut down only last November, to make room for improvements. The projectors of the fine park at Chicago, have planted one of their finest avenues with this tree. The Out-leaved Birch is in Ontario planted in the most prominent and conspicuous positions upon lawns. It is a rapid grower, and attains a very considerable size. For avenue planting it is preferred to all other trees, and it has been extensively used for this purpose in western New York. Young's Weeping Birch was raised at Godalming. To the graceful elegance of the Birch family, it adds the erratic habit of the Weeping Beech. Its long, slender branchlets fall from the main branches in thread-like spray.

The Kilmarnock Weeping Willow was introduced into Ontario in 1857. It was first discovered growing wild in a sequestered corner of Monkwood Estate, near Ayr, in the west of Scotland. This Willow is well adapted for small lawns, and for such it is often grafted on stocks from 6 ft. to 8 ft. high. Though comparatively little cultivated in its native country it is highly esteemed in America.

The Weeping Beech is one of the most remarkable of drooping trees, as its branches first shoot upwards then outwards, twist and turn in a variety of shapes, and finally droop and trail on the ground. It is one of the largest of lawn trees, and in Ontario some specimens cover an area of 100 ft. in diameter. One of the first specimens known grew in the garden of the Baron de Man, at Brussels, and a noble specimen was to be seen in the nurseries of Mr. Anthony Waterer, at Woking.

The White-leaved Weeping Linden is a handsome drooping variety with large round leaves of a greyish-green colour above and a silvery-grey beneath. When worked upon stocks of standard height the branches first shoot out horizontally, and then bend gracefully towards the ground. Its distinct silvery foliage makes a fine contrast with the deep green of surrounding trees.

Of Weeping Elms the country possesses many varieties. Prominent among these is the American Elm, a noble and stately tree. The Camperdown is a very picturesque and elegant variety; its growth is strong and its branches often assume a zigzag form outwards and downwards; the leaves are large, dark green, and glossy, and cover the tree with a luxuriant mass of verdure. The Scotch Weeping Elm is also extensively cultivated, but it does not equal the last-named.

The Weeping Mountain Ash has probably received as much attention as any weeping tree, on account of its distinct and curious habit when worked 2 ft. or 3 ft. from the ground and allowed to grow wild. In the autumn when it is laden with large clusters of bright red fruit it produces a brilliant effect.

The Weeping Poplar is not so elegant as some of the drooping trees noticed above, but its character is decidedly pendulous, and its branches spread and droop gracefully. As it is a rapid grower, it is well calculated to produce immediate effects in situations where such trees are desirable.

The appropriate position for these trees is always upon the open lawn, single, never in groups or masses, nor mixed up with other trees in belts or borders. In the hands of a skilful planter they are capable of producing the most charming

results, and are more effective in giving character and expression to a landscape than any other trees. A. J. BURROWS.

SHRUBS FOR SMALL GARDENS.

Now that frost may soon be expected to relax its hold and better weather set in to dry and improve the condition of the ground, it is high time to be looking round to see what mischief the severe winter has wrought among evergreens and ornamental plants with the view of taking the first opportunity to set about repairing the damage. Where Hollies have to be planted, in trenching or digging holes for them or other shrubs of a like character, some thoroughly decomposed manure worked in with the soil will be found a great help, not only in expediting their growth, but in inducing finer leaves in the case of the variegated kinds. Next to Hollies come the Aucubas, which, since the male variety has been introduced, have been greatly improved. To get them to bear berries freely, it is only necessary to plant a male plant near, in order that the bees or other insects may carry the pollen from one to the other when searching for the rich nectar which the flowers contain. Except the Eucunymus, I know of no shrub that will bear smoke and dust better than the Aucuba, and this makes it of great value for planting in the vicinity of towns. The same may be said of the Eucunymus, the habit of which is close and bushy, and the plant altogether well suited for a limited space. Palms are everybody's favourites, and were it only known how hardy *Chamærops humilis* is, I am sure it would be in great request for the embellishment of forecourt gardens and planting on lawns, as, when it attains a little size and age, it is a noble-looking object, and a great ornament in any place. As to its power of withstanding intense frost and cold, the severe time through which we have just passed has tested its capabilities in this respect, and, although quite unprotected and fully exposed, I cannot see that the one which we have here has sustained the least harm, nor do I hear of any others elsewhere having suffered. Another fine-leafed plant is *Berberis nepalensis*, which has magnificent Palm-like leaves of great size and of a deep, glossy green colour. In form it greatly resembles the old and well-known *B. Aquifolium*, but it is considerably larger and more upright in growth, and when in flower or bearing fruit in such clusters as it usually does, it is one of the most effective evergreens that can be had.

For affording variety and breaking up uniformity, nothing comes in better than the Bamboos, the hardest of which is *Bambusa Metake*, a variety introduced many years ago from Japan. This, during the present winter, has retained its foliage and is quite unharmed, but *Arundinaria fastata*, the most elegant of all, is leafless, although the stems appear as if they would become refurnished in the spring. To grow or associate with these, *Arundo conspicua*, *A. Donax*, and the Pampas Grass, are the most suitable, any, or all of which brought into juxtaposition, produce a striking effect. The whole of these like a loose, open soil, with plenty of water during the summer and autumn, when growth is active, or the *Arundo* and Pampas are about throwing up their fine plume-like flowers. *Aralia Sieboldii* is, likewise, found to be sufficiently hardy to withstand ordinary winters, and is a plant of noble aspect and one that should not be lost sight of, as it is thoroughly deserving a place wherever room is available. The leaves of this fine *Aralia* are much larger than those of the Fig, and are deeply cut or divided, and being so bright and polished looking, are exceedingly ornamental. After a few years' growth, and when fully established, it sends up huge panicles of flowers greatly resembling those of the Ivy, as do also the berries that it bears afterwards, from which young plants may be readily raised. *Garrya elliptica*, when clothed with its long, drooping inflorescence, is an object of great beauty. The flowers are borne at the ends of the young shoots formed during the previous year, and have much the appearance of the catkins of the Hazel, but are considerably longer and more ornamental. Then again, there are *Rhododendrons*, the most beautiful and hardy of all flowering shrubs, that only require to be planted in peat or sharp, gritty soil, and supplied with plenty of water to succeed perfectly. *Berberis Darwinii* and *B. stenophylla* are remarkably handsome when laden with their rich gold and bronze-coloured bloom, and both are plants specially adapted for small gardens, as they may be pruned and kept to any size required. Among deciduous kinds, *Cydonia japonica*, *Deutzia crenata*, fl.-pl., *Philadelphus grandiflorus*, and the double Almonds and Cherries, are the most striking, to which should be added the lovely variegated *Acer fraxinifolium*, that shows up so well against dark evergreens. If space admits of planting a few upright-growing trees, *Cupressus Lawsoniana* will be found to be one of the most suitable, as it is of moderate stature and of a graceful, drooping habit which improves with age. Of smaller size, but fit associates for this come the *Retinosporas*, which equal in beauty some of the finest Ferns. All these are particularly suitable for neatly

dressed grounds where really choice plants are required, as are also the Gold and Silver Yews, which, when making their young growth, are particularly bright and cheerful looking, and at a distance appear as if covered with bloom.

If instead of the heterogeneous mass of things one generally sees crowded into small gardens and pleasure grounds, such choice plants as the above were selected, how much better would be the effect produced, as then each might be so placed as to have proper room in which to develop itself, and show off its natural beauty to advantage. There is no time more favourable for a general overhauling and rearranging of evergreens than the end of March and beginning of April, as then if carefully lifted with good balls and plenty of root they are sure to grow, whereas those interfered with in the autumn have the winter and cold cutting winds to contend against, under which they frequently succumb. The only drawback to spring planting is, that it has to be done quickly, as at that season the buds soon burst, and it does not do to have the plants long out of the ground after the young shoots begin to show themselves. Caught just before this, the top and bottom start away together, and with a little mulching and a few good waterings, shrubs of whatever kind become quickly established. S. D.

A FEW CALIFORNIAN WILLOWS.

SOME years ago Prof. Asa Gray, the veteran botanist of the United States, gathered up all the Willows of his Herbarium at Harvard University, and sent them to M. S. Bobb, of Illinois, who had a Willow garden—a "*Salicetum*," as he scientifically called it. Mr. Bobb was making a study of the *Salices*, and had plants from many parts of the world. American botanists began to rejoice that at last a competent man would do a good service to botany, and make himself a well-deserved reputation in a difficult field. I was applied to for Californian species; that was more than six years ago. I made a pretty careful study of the Willows of Santa Cruz, and will give the readers of "The Horticulturist" the result of our work, so far as this locality is concerned. I fear Mr. Bobb has become discouraged. The task of arranging American species in a satisfactory manner is as yet unaccomplished. The Willows are the "black sheep" of the botanist, and to be successful they must be studied at all seasons of growth. Herbarium specimens will not do, unless selected as but few collectors ever select them. It is necessary to have the flowers, staminate and pistillate, in their different stages of growth. These are borne on different trees, giving the trees quite a different aspect during the flowering and fruiting season. Then the leaves should show different stages of growth, and the different ages of the plant make quite a change in the appearance of the leaf, so that leaves from young trees and old trees of the same species must be compared. Then, after the botanist has all these, still he may be confused unless he has the growing plants before his eyes. Mr. Bobb's plan of a Willow garden was therefore a good one. I tried to encourage the starting of one at our university, and sent about fifty species for trial. Nearly all have perished between squirrels, drought, and want of proper care and place to rear them. But the Willow is a beautiful tree, and many species are quite ornamental; their uses are numerous and valuable; they are easy of cultivation, and yet we know less about them than almost any other tree. There is no garden in America, except Mr. Bobb's, where they can be studied and compared. Kew Herbarium is the only place where American types of the Willow can be found. In California we have some very handsome indigenous Willows. Growing in the vicinity of Santa Cruz we have five species, as follows:

1. *Salix Bigelovii* (Torr.).—Bigelow's Willow, the commonest species in California, grows from 10 ft. to 50 ft. high, generally along streams and river bottoms. Leaves spatulate, glossy green on top, pale glaucous underneath, sparingly toothed on the edges, with the margin wavy. The young branches make good baskets. It flowers from January to June. It does not correspond well with Bigelow's Willow, but for the present must bear that name.

2. *S. lasiandra* (Benth.).—This, in thorny trees, has long, tapering leaves, nearly the same shade of green on both sides, evenly and sharply serrate. It is found in the same localities with No. 1. In somewhat impoverished trees it has long, slender branches and drooping, somewhat like the Weeping Willow. It has several names—*S. lucida*, *S. pentanota*, and a number of varieties. Corresponds with the Shining Willow of the Atlantic States.

3. *S. laevigata* (Babb).—This seems to be a new species, and a beautiful Willow too. The leaves are smooth and shining, finely serrated with sharp point, not tapering, glaucous underneath, beautifully veined. The tree grows from 10 ft. to 50 ft. high, with a pyramidal aspect when young. It resembles a cherry tree somewhat. The flowers (catkins) are pale yellow, long and slender; it blooms in

June, and the flowers remain on the tree for two or three months. Found with Nos. 1 and 2.

4. *S. stichensis* (Bongard).—This is the Sitka Willow, found sparingly at Santa Cruz, perhaps its southern limit. It is beautifully lined with white velvet on the under sides of the leaves—the upper sides are dark green, evenly veined, with scarcely a trace of velvet except on the midrib. The tree, from 5 ft. to 15 ft. high, has a reclining aspect, and grows in wet places near the edge of and bending over streams. Over the bay at Monterey is found *S. Coulteri* which resembles the Sitka willow in the velvet appearance of its leaves, but it is a different species, and very pretty.

5. *S. brachystachys* (Benth).—A very interesting little tree on our brushy hill and mountain sides, seldom coming down to the bottom lands. In February the male flowers light up the hill sides with their short woolly catkins, in a glow of white splendour; but the female flowers, larger and coarser, do not appear until late in May. The leaves are in shape like those of *S. Bigelowi*, but are lined underneath with a thin coat of fine hairs which turn rusty brown as they become old.

When the second volume of our Californian Botany is published we hope, through the perseverance of Mr. Bebb and others, to see the Willows of our State brought into a more satisfactory system, so that our local botanists and horticulturists may understand each other better when talking of this useful and beautiful genus of plants. —DR. ANDERSON, in "Californian Horticulturist."

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS.

Polygonum virginianum.—This is one of our most beautiful summer flowering shrubs, if I may so call it, for it is cut down to the ground like a *Phlox* in winter, but it grows quickly into the form of a shrub in summer, and produces shoots from 6 ft. to 10 ft. long, which are completely covered the whole of that length with little pendant clusters of cream-coloured *Spiraea*-like flowers. It is a useful showy plant, and one which should be planted in all shrubberies.—CAMBRIAN.

Seedling Cork Trees.—Although the Cork tree does not, as a rule produce many good Acooms, yet, in favourable seasons, we get a few for planting, and some of the young plants are now attaining considerable dimensions. In their young state they require attention in the way of stopping strong side shoots that are rivaling the leader, for, if left to their own habit of growth they appear more inclined to form a spreading many-headed bush than a fine single trunk. The beauty of many a specimen is marred through lack of a little judicious pruning during the early stage of growth.—J. GROOM.

The Royal Forests.—There has been a good deal said lately about the way in which Dulwich College, Wellington College, and the Royal Patriotic Fund are managed, but the strongest charges brought against the administrators of these funds fade into insignificance by the side of the returns given in the "Financial Reform Almanack" with regard to the "Royal Forests and Woodlands," which show that, extensive and valuable as these properties are, they are anything but profitable to the public:—Dean Forest: Receipts, £8,814; expenditure, £6,720; cost per cent. for management, £76. New Forest: Receipts, £11,909; expenditure, £9,986; cost per cent. for management, £83. Windsor Park and Woods: Receipts, £5,977; expenditure, £26,968; cost per cent. for management, about four and a-half times more than the receipts.—"Truth."

The Climbing Hydrangea (*Schizophragma hydrangeoides*).—Considerable expectations have arisen concerning this new climber. Possibly, also, these expectations have been exaggerated by incorrect reference to the charms of *Hydrangea paniculata grandiflora*, charms that have dimmed by comparison the beauties of other *Hydrangeas*. The conception of a Climbing *Hydrangea*, with great white or pink flower trusses 18 in. long enveloping the front of a building, rather startles the imagination. But the correct statement that the plant in question has a poorer truss, with sterile flowers less showy than those of *H. paniculata grandiflora*, should moderate any excessive expectations. After all, we know of no one who has flowered the Climbing *Hydrangea* in America, and certainly, in other respects, our knowledge of its behaviour is small. Seed has been imported within a few years, for the first time from Japan, and a few plants exist. We have some small plants ourselves, and Messrs. W. S. Clark, C. S. Sargeant, and P. Henderson have others. It seems to us premature, therefore, to decide as yet on its merits. The foliage is attractive, and, judging from descriptions of eye-witnesses of its beauty in Japan when in bloom, its value must be considerable. With us it grows slowly at first, like the *Wistaria*, until it obtains

well-established strong roots, when its development is rapid. Its propagation from seeds or cuttings is easy, and it seems, after the trial of several years, to be perfectly hardy. Mr. Peter Henderson has a variety that differs somewhat from ours in habit and growth of leaf, but it is doubtless the same thing, showing merely the ordinary tendency to vary. Although it is too soon to give an opinion concerning the value of this climber, I feel confident that it will yet prove a fine ornamental flowering vine for America. Our need, moreover, for more good hardy flowering climbers has been frequently felt and expressed.—"Rural New Yorker."

THE FRUIT GARDEN.

FRUIT CULTURE FOR MARKET.

ALLOW me to inform Mr. Burbidge (p.215), that hardy fruit culture, even here in Kent, is not that "El Dorado" of wealth for the growers that consumers might imagine, and it is no stretch of imagination to suppose that vast quantities of fruit are spoiled in this neighbourhood in plentiful seasons, simply because it cannot be got with profit from the growers to the consumers. In order to illustrate my meaning more fully, I may state that last summer Apples of the poorest description were selling for more per peck in Suffolk, than Kentish growers were getting per bushel from the London market; really first-class Keswick Codlings fetched only 2s. per bushel, and of this 1s. was paid for carriage and other market expenses. It will therefore be seen that no great margin is left for labour, rent, and profit. If the consumer benefited by such low prices there would be less to regret, but the general public only get a fractional advantage, as they pay nearly as much in plentiful fruit seasons as in those in which there is a scarcity. I may remark, that it is not from a lack of knowledge of their business that growers fail to make fortunes from fruit growing, as no class of men so closely study the fluctuations of the market. But the Plum crop is a precarious one, and any soft kind that keeps only a few days after it is ripe, is almost sure to glint the market, and in this respect Damsons pay about the best of any Plum crop. I may remark that some of the freest bearing Apples, as Lord Suffield and Cellini, although so well suited for private gardens are not good for market, as, being too soft and light, they bruise easily, and being retailed by weight do not suit the hawkers.

Linton Park, Maidstone.

J. GROOM.

I WILL confine my answer to Mr. Burbidge (p.215) chiefly to his own writings on this subject. I stated that "in a plentiful year hundreds of bushels of good Plums, Apples, and similar fruits are allowed to rot because the market is so well supplied from abroad that they would not pay for the gathering." This statement Mr. Burbidge confirms in his writings on "Fruit Culture for Market," where he says "the market salesmen also foster the introduction of foreign fruit, because it enables them to be, to a great extent, independent of the fruit grower here at home, and hence he is obliged to take low prices for all but the very best of his produce. Many of the market gardeners near London left tons of Plums to fall and rot on the ground in 1875, because the market was glutted with foreign fruit, and the prices offered would not pay for picking and carriage, and since it has been the case with Strawberries." I did not infer that early Plums were a failure generally, but that they often are is indisputable. Neither did I infer that late Plums are not now grown to some extent, but the produce of the few growers mentioned by Mr. Burbidge is like a drop in the ocean, and as late Plums, according to Mr. Burbidge's saying, pay so well, that it is so much in favour of my statement, viz., that "if late Plums, to come in after the bulk of the foreign produce was over, were grown, there would be a good chance of profit arising from their culture." Albeit, I may add that in some years "even the finest fruits have failed to realise 6s. per sieve," a very low rate indeed. There is always a ready sale for fruit at a price, and there are hundreds of tons more fruit consumed now than formerly, on account of the produce supplied by the foreigner, who sends shiploads at a time to our markets, which is sold by auction for what it will fetch, greatly to the disadvantage of the home grower, should he send his produce to market at the same time. We have no proof that the foreign grower always exports his fruit at a profit; but, that he can grow it cheaper is certain; on this point your correspondent remarks:—"The American fruit grower, who obtains 400 bushels of fruit every other year for twenty years from his rich cheap soil, without manure, and with a minimum of labour and cost, can easily compete with the English grower who pays an annual rent equal to the whole purchase money of his competitor's land, and has to spend fully as much more in manure and labour; but, if the Western grower should, by fertilising his land, double its yield, the extra 400 would not be grown at a profit." This clearly shows that when a glut

of foreign fruit comes in the home grower stands no chance of profit whatever; and, if Mr. Burbidge claims great superiority for English-grown fruit, I would refer him to a statement made by himself, viz., "the American fruits that cross the Atlantic, and that have perhaps travelled hundreds of miles to or from port, look nearly as free from blemish as those of home growth." Then, as regards meat *versus* fruit culture, I still say that the calculation referred to by Mr. Burbidge fails to fairly represent the case, for whilst I am well aware that considerably more than £100 worth of fruit and vegetables could be obtained from two acres of land in three years, even under ordinary management, I consider that the difference in the capital and labour required to cultivate two acres of land for three years and that of utilising the same space for meat culture is so great that the only way to arrive at anything like a satisfactory statement would be to invest a stated capital in the culture of the two, and judge by the profits at the end of the term.

C. W. S.

THATCHING VINE BORDERS EARLY IN AUTUMN.

COVERING Vine borders with a deep layer of dry leaves and thatching all over thickly with Wheat straw has been recommended by those who object to fermenting materials as a plan by which we may "retain the accumulated heat of summer" in a Vine border, provided the border be covered early in the autumn. One eminent Grape grower, who shares these views, has produced authorities to show that a border, covered with 18 in. of dry Wheat straw early in autumn will retain the accumulated summer heat in the border well through the winter. Now it follows that if a border covered by non-conducting materials at the end of the summer retains the heat throughout the winter, the temperature of the roots of the Vines during September, October, and November may be very much in advance of that to which the tops are subjected, 20°, we should say, at least, and, as all know who have to do with early forcing, it is the practice to keep Vines that have to be started in November or December as cool as possible during the autumn months, in order to keep the buds from pushing before their time. I have myself no objection to the thatching plan, except that I think it is an unwise practice to keep the tops cool and the roots warm at a season when it is of the utmost importance that both should have complete rest. One danger to be apprehended with Vines that have been forced early for a few years is the premature breaking of the permanent buds, which frequently occurs, and is only too much facilitated by keeping the roots warmer than they ought to be. It is obvious at all events, I think, that covering the borders early in autumn to retain the solar heat is a practice totally inconsistent with the theory that the roots should not be subjected to a temperature in advance of the tops. Has this aspect of the question presented itself to those who hold this theory on the one hand and advocate the early covering of Vine borders on the other.

Wortley.

J. SIMPSON.

POT VINES.

"A. D." (p. 216) says that injury from exposure in the case of pot Vines depends upon the way in which they have been grown. This is far from the fact. Grow Vines in pots as well as the best of treatment can produce them, and allow the pots to stand upright out-of-doors through a wet autumn and the early part of winter, and the roots will be pretty certain to be found rotten even if frost has not reached them. "A. D." confuses the preparatory growth of pot Vines with their forcing. Cultivators understand forcing to mean the treatment to which they are submitted on the season in which they produce fruit, let this be with canes from eyes or from cut backs. "A. D." speaks of some nurseries in which pot Vines are not subjected to more heat than is necessary to start the eyes. This will do for such as are required for permanent planting, but what about the quantities grown to sell for forcing? Treated in this way they would scarcely have shed their leaves in the autumn before the new ones were required to be on them. As to the assertion that pot Vines should never be exposed to the open air, if "A. D." will visit in August or September Messrs. Osborn's nursery at Fulham, he will see standing out-of-doors in rows on the sunny side of, and resting against moderately low, closely-clipped hedges, such quantities of short-jointed canes, as thick as a man's thumb, already brown and as hard as whalebone, yet still carrying their leaves green and healthy, as will show the mistake under which he labours respecting pot Vines. That immense numbers of Vines of this description are injured by being out-of-doors with their roots in a position to suffer from the wet and cold, most people are aware, and, for this reason, whenever I have had occasion to purchase Vines, if there was any probability of their having been injured, I have always examined the state of their roots. Even for planting, whether this is done whilst they are dormant or after growth

has commenced, it is well known how Vines that have all their roots alive and healthy make headway over others that have been damaged.

T. BAINES.

TWO EARLY APPLES.

AMONGST the many early dessert Apples, there are, perhaps, none better known, and few more relished or of higher merit, than the Oslin. More especially is this so in Scotland, which seems to be its adopted home, for there its qualities are superior even to what we find them in the south, where, however, it is also much prized. The Oslin is a very old Apple, and one of a very distinct character, which can scarcely be confounded with any other. There is no very authentic record of its origin, but it is supposed to have been introduced by the monks of Arbroath from France; and this is very likely to have been the case; still, it is strange that no trace of this name or of this Apple can be found in any French list of fruits. Like most good fruits, the Oslin enjoys many synonyms; amongst others, it is often called Arbroath Oslin, Arbroath Pippin, Scotch Oslin, Summer Oslin, Mother's Apple, Burr-knot, Orglon, Orgeline, &c. The fruit may be described as of medium size, flatish or roundish-oblate in shape, very evenly and regularly formed; eye large, open, prominent; stalk short and inserted in a slight cavity; skin rather thick, pale yellow, and strewn with brown dots; flesh yellowish, firm, very rich and sprightly in flavour. In warm seasons it is apt to be somewhat dry, and at other times it is liable to crack, often to a great degree. In use during September. The tree is of free growth, of erect habit, with large, broad leaves, somewhat liable to canker as it grows old, and the branches are frequently covered with knobs or burrs, from which roots are readily formed, on their being placed in the ground.

Early Julien.—This is a very excellent early Apple, generally relegated to the kitchen; but it is really a very good dessert fruit. It is not quite so captivating in appearance as many others, but in quality it is unique. The peculiar brisk aromatic flavour of the flesh, and its crisp freshness, render it extremely pleasant on a warm day in August, when juicy fruits are scarce. In the "Fruit Manual" it is compared to the Hawthornden for all its good qualities, and indeed it might be called a summer form of that variety. The fruit is of medium size, roundish and somewhat angular. Skin smooth, pale yellow, having frequently a tinge of orange on the side next the sun, and strewn with whitish dots. Eye large, the segments broad, closed, set in an irregular basin. Stalk short, set in a deep cavity. Flesh yellowish-white, crisp, juicy, brisk, and pleasant. It comes into use early in August, and is much esteemed for cooking. The tree is a free grower, and succeeds well on the Paradise stock as a dwarf.

—"Florist."

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Damsons, being in most seasons remunerative, are being now largely planted in Kent and elsewhere. Every year most of the orchard hedgerows near Maidstone are planted with them, and in some cases two or three rows of them are planted as wind screens for tenderer fruits. The Crittendale Damson raised in this neighbourhood is held in high estimation. Plums, when good, glut the market, and prices go so low as not to pay for the gathering; but Damsons coming in when other soft perishable fruit is over always sell well, and in some seasons realise a good profit.—J. G., Linton.

Old v. New Melon Seeds.—At a meeting of the Botanical Society of France, M. Dacheux called attention to a statement of M. Gazzuola in the bulletin of the Tuscan Horticultural Society in 1877, to the effect that Melons raised from fresh seed bear a large proportion of male flowers and very few female flowers, while, on the other hand, seedlings raised from old seed bear many more female flowers than male. The statement was confirmed by M. Millet, a French grower, and, we may add, by the experience of Melon growers in this country.

Crab Apples.—The value of Crabs was thoroughly discussed at a recent meeting of the Maine Pomological Society, and they were generally denounced in emphatic terms. When, some years ago, they were introduced, they were recommended not only for extreme hardness, but for the high prices at which the fruit would sell. It is found now that there is little market for them, and they will not sell for nearly the price paid for common Apples; while the persistence with which they hang to the tree, with their small size, renders gathering slow and laborious. Dr. Reynolds, in a paper on the subject, stated that there were already more trees planted than will supply all the fruit needed, and that they could not be regretted to advantage, as they make poor stocks. Mr. Smith said "Crab Apples

are not worth the picking." Mr. Wheeler thought a tree or two would be well for each fruit grower for culinary purposes. President Gilbert said there could be no reason for growing them except where the climate is such that common Apples entirely fail. A letter was read from Dr. Hoskins, of Newport, where the winters are intensely cold, and where some years ago much attention was given to raising the Crab in its many varieties, in which he says, in speaking of Crab stocks, "It has got so in Vermont that to say Crab stocks to a fruit grower would be almost at the risk of one's neck. They have had a full trial in Northern Vermont, for nearly twenty years, and the only result is utter failure. The trees begin to fail almost as soon as they come into bearing on Crab stocks." The Russian Apples, he adds, as Totofsky and Oldenburgh, are the only sorts that endure that climate, and, although not of first quality, are profitable.—"Country Gentleman."

SCENT-YIELDING PLANTS.

By G. W. SEPTIMUS PIESSE, F.C.S.

Ilang-Ilang (*Cananga odorata*).

This plant grows abundantly in the Philippine Islands, and is especially cultivated in Manilla by M. Julien, of Westembayan, to whom I am indebted for the illustrations from which the annexed woodcuts were prepared, and also for examples of the



Ilang-Ilang (*Cananga odorata*).

Champaca (*Michelia Champaca*), or false Ilang. The true Ilang-Ilang (Flower of Flowers) yields, by distillation of its blossoms, a minute quantity of an otto resembling the odour of the flower from which it is derived. The value of this otto, when pure, is from 18s. to 22s. per oz. in the European perfume market. Unfortunately, however, there grows in the same country the Champaca tree, which yields an otto, by distillation of its leaves,

somewhat resembling in fragrance that of the Ilang-Ilang, but of little more commercial value than the otto of Pimento, which realises 2s. per oz. With this the true Ilang-Ilang is frequently adulterated. The otto of Ilang-Ilang has not been introduced into Europe more than about sixteen years, but the



Flowers and Fruit of *Cananga odorata*.

price that it fetches, when pure, shows that it occupies a prominent place amongst perfumes.

Leaf Mould and Root Fungi.—In lifting a quantity of Roses lately that were in an unsatisfactory condition, I found that the lower roots were infested with fungus, evidently caused by planting in leaf mould, for all the roots that had run into the natural stiff soil were quite fresh and healthy. Leaf mould is doubtless most valuable when composed of leaves alone, but too often sticks and pieces of dead wood are largely mixed with it, and in that case it becomes a dangerous medium for fungi. As regards Roses, good farm-yard manure is generally better than leaf mould.—J. G., Linton.

Storing Ice.—If "C." (p. 227) will look at my remarks (p. 161) on ice storing again, he will find that I never recommended running up through an ice house "a chimney stuffed with straw and a central flue." I know nothing of "stacking ice in the form of a cone," I never saw one; I know, however, something of filling a vault, or well, or cellar with ice full up to the apex or top—filling up every inch with ice, but have no idea of such places being fitted with a cone. Why in a cone, which contains, geometrically, the least amount of matter for its height which any form can assume? I fully admit "C.'s" observations that ice can only melt by the action of heat on its outer surface, and certainly a cone is all outer surface; but where is the outer surface of a vault or cellar of ice wholly below the level of the ground? On the top, (certainly not the top or point of a cone), whereon the heat, the melting agent, strikes vertically, and on opening such places I have found the wasting ice with a dead flat or even concave form, containing water like a bowl; hence the advocacy of a column of straw as drainage down the centre, but not a "chimney stuffed with straw." Certainly a cone of ice needs no central chimney, seeing that a cone is little more than a chimney itself.—THOMAS WILLIAMS, Ormskirk.

PLATE CLXXII.

GLADIOLI AND THEIR CULTURE.

(WITH A COLOURED FIGURE OF MRS. BATES.)

Drawn by Mrs. DUFFIELD.

GLADIOLUS, MRS. BATES, was raised by Messrs. Kelway, of Langport, Somerset, in the year 1870, and was awarded a first-class certificate by the Plymouth Horticultural Society in 1874. It was named Mrs. Bates, in compliment to the wife of the president of that society, the senior M.P. for Plymouth. Its flower spikes, which are of the largest size, are thickly beset with blooms of the finest form, and very constant as regards colour and marking. Messrs. Kelway's name has long been associated with the Gladiolus, and few, if any, have done so much to improve it, or have been so fortunate in raising so many fine kinds, remarkable alike for their diversity in colour, and for their substance, breadth of petal, and general habit, points which Messrs. Kelway have persistently maintained were essential collectively to constitute a good Gladiolus. Their stock comprises upwards of 2,600 varieties under name, the greater part being their own seedlings. In choosing a position for Gladioli when spikes for exhibition are required, it is of the utmost importance that an open situation should be selected. There can be no doubt that a deep loamy soil, not too heavy in texture, is the most suitable for the production of spikes for exhibition, but by deep digging and liberal manuring, very satisfactory results may be obtained in soils of even an uncongenial character. Early in autumn the soil should be dressed liberally with manure from an old hotbed. After it is spread regularly over the surface, trench the soil up to a depth of 2 ft., and leave the surface as rough as possible, so as to expose a large body of it to the direct action of the frost and rains during the winter: this is of importance in the case of heavy soils, for it is very desirable that they should be thoroughly pulverised by the action of the weather. If this is done it will be in good condition for working in spring, and a pricking over with the fork will suffice to reduce it to a fine tilth, and even in wet seasons admit of the bulbs being planted without unnecessary delay. The planting of the bulbs should commence in March, and be continued at intervals of a fortnight until June. By this means a succession of bloom will be obtained from the earliest moment at which the show varieties may be had in flower until quite the end of the season. If planted in beds the rows should be 18 in. apart, and the beds must be 4 ft. in width. Beds of this size will admit of one row being planted down the centre, and a row on each side at a distance of 6 in. from the edge of the bed. As soon as the plants have made sufficient progress to require support stout stakes should be put to them. The top of the stake must not be higher than the first bloom, and the stem should have one tie only, and that a strong one of bast. After they are staked the surface of the bed should be covered to a uniform depth of 4 in. or 6 in. with partly-decayed manure. This dressing is of the greatest value, for it materially assists in keeping the soil cool and moist about the roots during hot weather. As soon as the plants show bloom liquid manure in some form is most beneficial in promoting a full development of the flowers. If for exhibition the spikes should be cut when about two-thirds of the bloom are expanded, as the lower flowers are generally of a finer quality than those towards the top.

In growing Gladioli for garden decoration it is simply necessary to select positions where they will present the most effective appearance, and there prepare the soil for them. They have a fine appearance planted in clumps between Dahlias, Hollyhocks, Phloxes, Roses, and other subjects of a somewhat similar character. They are also very effective planted in clumps alternately with Tritomads, and also associated with large masses of Cannas. They are likewise in every way suitable for intermixing with American plants, the dark foliage of which shows off the richly-coloured flowers to good advantage. The positions for them should be marked out in the course of the autumn or winter, and two or three spadefuls of manure should be dug into them. As a rule, the space for each clump of bulbs should be 18 in. in diameter, and the soil should be turned up to a depth of 18 in. or 24 in. March and April are the best

months in which to plant for garden decoration, as they are then at their best during August and the early part of September. Plant from three to six bulbs in each clump, and confine each group to a separate colour. They must be staked in much the same manner as those intended for exhibition, to prevent the wind from injuring them.

In selecting Gladioli for exhibition, Messrs. Kelway have found, after long experience, that, to insure a supply of a given number of spikes at any particular moment, a large number of sorts should be planted. That is to say, instead of planting from six to twelve bulbs of a sort, it is preferable to plant from one to three of each variety, and increase the number of sorts accordingly. For example, in purchasing a hundred bulbs, from fifty to seventy varieties should be selected. For decorative purposes it is also preferable to have a large number of sorts, because of the greater variety of colour which they afford. The improvement which has been made in this beautiful flower within the last ten years has proceeded at such a rapid rate that many of the sorts which, a few years ago, occupied a foremost position are now quite surpassed, and for exhibition purposes are comparatively worthless. We therefore select from Messrs. Kelway's collection a few of the very best kinds, remarkable alike for good form and texture, and unquestionably the best in commerce. The varieties possessing these qualities are:—

ADA, salmon-red, flaked with carmine; centre, rose, white line on each petal.

AGRIUS, salmon-pink, flaked at the edges with vermillion, eye creamy-yellow; a flower of great substance.

ARIMUS, claret, flaked with purple, centre white.

BALL OF FIRE, scarlet-crimson, centre blue, maroon-spotted.

BEAUTY OF ENGLAND, white with yellow blotch, and violet stripe; a flower of great substance.

BELGICA, flesh, veined with lilac; a flower of great substance.

BRENNUS, crimson-maroon, centre white, tinged with blue, and possessing a violet stripe on the lower petals.

COLONEL PINNEY, white, slightly flaked with lilac.

DR. WOODMAN, salmon, flaked with pink and lake, and having a large blotch of carmine on the lower petal; a fine exhibition flower.

EGYPTIAN KING, maroon, with a violet stripe on the lower petal.

EUSEBIUS, scarlet, centre white.

FELIX, crimson, flaked with carmine.

LADY BRIDPORT, bluish, flaked and striped with carmine; for exhibition, one of the best in commerce.

MRS. SALWAY, crimson, spotted with white.

MR. DERRY, amaranth, flaked with purple, and lined with white; tall fine spikes.

MRS. KYMARTIN MAINWARY, dark red, flaked with maroon, spotted with white, and edged with blue on the lower petal.

OVERON, lilac, flaked with violet on lower divisions; carmine rose.

PHILIP STUCKEY, rose with a white line, and blotched on the lower divisions.

SIR MASSEY LOPES, orange-rose, with a light centre, lower petals white, with a purple stripe; a fine flower.

VICTORY, flaked crimson, centre purple; a lovely variety.

It is necessary to observe that the bulbs should be taken up as soon as the leaves begin to turn yellow. Place them in a cool room where they can be dried gradually. When dry clean them and put them into paper bags, and store them in a dry room where they will be quite safe from frost.

Asparagus decumbens.—This plant, of which an illustration is given in THE GARDEN (p. 212), although introduced as far back as 1792, does not appear to have been cultivated in gardens until recently. It is a native of the Cape of Good Hope, and is a plant of very easy culture. In the spring—say March or April—the stems of the past year's growth die down, and if it be desirable to increase the stock, the tubers should be divided at once, taking care not to overpot them; they may then be placed in a cold frame, and will require but little attention for some time. They should be watered sparingly until the stems appear above the ground, when a more liberal supply will be necessary. Early in July they should be placed out-of-doors on a bed of coal ashes, and should remain there until the middle or end of September. By this time the stems will be from 1 ft. to 1½ ft. in length. A few plants might with advantage be placed in a temperature of from 50° to 60°, which will hasten the development of their leaves and flowers, the remainder being kept in an ordinary greenhouse temperature. The flowers, though small, are deliciously fragrant, one plant being sufficient to shed an agree-



able performe throughout a large conservatory. For dinner-table decoration it is invaluable, its pendulous, feathery spray rendering it particularly useful.—H. VERTEGANS, *Chad Valley Nurseries, Edgbaston, Birmingham.*

PREPARING PLANTS FOR TRANSPLANTING.

MUCH of the success in moving young plants propagated from seed or cuttings depends upon the way in which they have been prepared for it, especially in the case of bedding or border plants that are put out annually in order to create a display which depends upon a quick and good growth as soon afterwards as possible. The plants may be all that could be desired when transplanted, but if roots and tops are not in a condition to progress at once, weeks may be lost before they begin to grow and flower freely. It is a fact, pretty well known, that when a plant or tree is put into the ground with its roots in the form of a matted ball, it never gets proper hold of the soil, never thrives as it ought to do, and is usually short lived. The roots of such a plant never leave the surface of the ground very far, but retain the bundle form in which they were first planted, and are consequently deprived of free root action, while exposed to the vicissitudes of weather in a far greater degree than they would have been had they penetrated deeply into the ground and got a stable hold of the soil. Trees that had been planted in the condition above described, and which had made little growth, have been found at the end of ten years with their roots in almost the same warped and pot bound state that they were in when turned carelessly out of the flower pot into the ground. It is to avoid causing anything approaching this condition that the cultivator should strive in rearing plants that have to be shifted into pots or transplanted, no matter whether the plants be large or small. The exigencies of modern gardening have taught cultivators a good deal in relation to such matters, still it is only too evident, from what one sees, that we have room for improvement. One of the most notable advancements ever made was the getting quit of the "thumb pot." We have known places where bedding and other plants were raised by the hundred thousand, and yet all were shifted on from the thumb pot, entailing an enormous amount of needless work in potting, watering, moving of plants, &c., and with anything but satisfactory results as regards successful culture; nor are such practices extinct yet, though we believe there are not many who have either the time or the inclination now to shift such plants as *Lobelias*, *Verbenas*, *Calceolarias*, and such like, twice between the time of striking them as cuttings and planting them out in the beds. This brings us to the subject of

Transplanting and Boxing off Seedlings and Cuttings of such plants as herbaceous *Calceolarias*, *Cinerarias*, *Primulas*, *Cyclamens*, &c., and bedding and border plants, such as *Verbenas*, *Lobelias*, and most subjects of the tender herbaceous type in either class. The greenhouse species are sure to be healthier and freer from insect pests and disease the longer they are kept out of flower pots. From the seed or cutting pot they should be pricked out into boxes or pans; but boxes are preferable and as cheap, if not cheaper, in the end, as they are not likely to be broken. When boxes can be made for the purpose, of a handy size, 3 in. or 4 in. deep (not more), and painted, it is best, but a very serviceable article may be manufactured on wet days by a handy man from old packing cases, or from unplanned ½-in. deals, or such other materials as may be procurable. Provision dealers have generally a good store of empty packing boxes of slim make that they are willing to dispose of, and which, when sawn up into sections about 3 in. deep and bottomed, make excellent temporary propagating boxes, that last for a couple of years or so; and such will be found useful. A few holes should be bored in the bottom of each box, or the bottom boards should be left a little open to permit drainage; but there is never much danger of the soil souring in boxes through insufficient drainage.

Pricking Out.—One of the greatest mistakes frequently made in pricking out seedlings and cuttings is the employment of a turfy or fibry compost, or the placing of such materials in the bottoms of the boxes above the drainage. Such a compost would be very suitable for a final shift, or for young plants potted off singly; but when the plants have to be shifted from the pans or boxes which they occupy with balls, such a compost renders it well nigh impossible to disentangle the roots without sacrificing the best portion of them. The roots get hold of the masses of fibre, and the plants hang together in an inextricable fashion, and can only be separated by drawing the knife through them, cutting away roots as well as soil, the result being a serious check to the plants. The compost should be well mixed and sifted through a ½-in. sieve, or even a smaller mesh for very tender-rooting subjects, and should be placed in the box without anything between it and the drainage. From such a compost it will be found that the plants will lift each with a little ball of soil attached to them, and without injury to the rootlets, unless

they have been allowed to remain too long in the box, when, of course, they will get root-bound, as in a pot, but which cannot happen if they are shifted in a reasonable time. When young seedlings or cuttings are pricked off, they are usually entirely shaken out of the soil and dibbled into the boxes, and some prefer to make a deep, or rather perpendicular, hole, and drop the roots straight into it—a good plan in planting out permanently, but not in pricking off. A blunt dibble should be used, and a round, rather wide, and not very deep hole should be made, into which the roots should be dropped in a bunch, and the soil pressed gently over them. When the plants come to be lifted out of the box, the difference between those so treated and others which have had the points of their roots let down deeply will be apparent. The first will lift with a ball of roots clustering round the base of the plant, and ready to take possession of pot or soil, as the case may be; but the second will be found to have rambled considerably "from home" and difficult to lift with all the roots, the best of which will have spread along the bottom of the box. These remarks apply more particularly to plants that have to be afterwards transferred to pots. As to the general run of bedding plants, with the exception of *Pelargoniums*, and such subjects as are the better for a check, they should never be in a pot after they have been struck, but should be boxed off or planted out on sheltered borders, where they can be protected, or in cold frames, and from such quarters transferred to the flower beds. The idea that such subjects suffer less check by being transplanted from pots is a mistaken one. The plants may drop a little at planting if the weather be very dry and warm, but they get hold of the soil sooner, and make much greater progress than semi-started plants that have been previously coddled for six weeks or two months in small pots, and they have always the advantage of being larger and finer to begin with, for a plant in a box or bed always makes the most progress. In transplanting from the cutting or seed pot to the frame, the same rules should be observed, as regards compost and planting, as have been given above, and the plants should not be crowded; but no more room need be given them than will just allow of a moderate ball of soil being lifted with each plant. If the soil be light and finely sifted, and allowed to get slightly dry previous to transplanting, the plants will come up easily with all their roots by just grasping the plant and soil in the hand, and they should be dropped into their places in the flower bed in the same way, and with as little interference with the soil as possible. There are, however, some border plants, annuals particularly, that do not succeed with intermediate transplanting, but should be transferred from the seed bed to the border at once. *Stocks* and *Asters* are examples of this. With care they may be pricked off from the seed bed and afterwards transplanted, but the check, less or more, which they are likely to experience is sure to tell upon the quality of the flowers. The best plan with all such subjects is to sow very thinly in a fine soil laid upon a hard bottom, into which the roots cannot penetrate, and transplant from the seed bed. The seedlings will pull or lift up with the best portions of their roots intact, and, if the border has been suitably prepared for them, they may be let into the ground with a dibble or trowel, first making a deep hole, into which the tap-root should be dropped perpendicularly.

For Vegetables transplanting is often beneficial, inasmuch as it promotes early fertility in some things, such as Peas and French Beans; the latter stand the operation very well, either singly and shaken quite out of the soil, or in groups from the seed pot. Cauliflowers are the greatest sufferers by transplanting, perhaps, of any vegetable. If pricked out in a finely divided soil, however, and lifted into good beds before they get too large, there is little danger of their "buttoning." We prefer, however, lifting the plants from the seed bed with the whole of their tap root, if possible, and planting them with a dibble, letting the roots down straight and deep into the ground. If the work be done carefully such plants always produce the finest heads. Of course, the seed should be sown thinly or the young plants should be thinned out well at an early stage. Few of the other tap-rooted vegetables, like the Carrot, Parsley, and Beet, transplant well, nor are they ever prepared for the purpose; but it is not unfrequently desirable to fill up gaps when it is too late to sow seed, and transplanting can then only be resorted to. We have transplanted all the above at times with success, when the work was carefully performed. The difficulty is not the getting the plants to grow so much as getting them to produce roots fit for use in the case of the Carrot and Beet. Everything depends on the weather at the time and getting the long tap roots up without injury and planting them safely. A good deep and straight hole should be made, the roots should be dropped into it as straight as they came up, and the soil pressed up against them, not too firmly. Watering will be necessary for a little while afterwards, especially in the case of Parsley, and if the latter can also be temporarily shaded with branches till it gets hold of the ground all the better.—"Field."

GARDENING FOR THE WEEK.

Stoves.

The sun now begins to influence the temperature of all plant structures in the middle of the day, and it often happens that during this month, more than any other in the year, the heat in the houses will rise high when the condition of the external air is such that opening the ventilators, except very slightly, would be most injurious, especially to the young, tender shoots of plants grown in stove heat; for this reason it is necessary for all who have the management of houses wherein are subjects to which continuous heat is applied to be constantly watchful of the weather at this time, particularly in the mornings, as, although it is desirable to raise the temperature without delay after it becomes light, still, if the working of the fires be not regulated by the appearance of what the weather gives promise to be during the day, the result frequently is that by ten or eleven o'clock, if it be clear and bright, the temperature of the house, from the combined effects of the sun and unchecked fires, is so high as to necessitate the admission of more air than should be given, which in addition to its chilling influence, dries up the atmosphere of the house in a way that causes the tender foliage to flag severely, and I have noticed with stout-leaved subjects like *Ixoras*, *Gardenias*, and *Medinillas*, that the young leaves which thus droop much are often permanently disfigured, and though the after progress made by plants so affected may be such as to lead to the supposition that little harm has been done, still there is no doubt from the sympathy which exists between the leaves and roots, that the latter suffer through any injury to the former, and the whole plant must be proportionately affected thereby. Thus the necessity there is for daily keeping a look-out as to the weather, and stopping the fires sufficiently with a view to avoid the temperature rising too high becomes obvious; but, should this occur, less mischief will result by letting the thermometer run up to 90° or 95°, with a little air on, than by reducing the temperature about 10° through the admission of too much air. Plenty of water thrown about on all evaporating surfaces helps to counteract the effects of heat rising higher than desirable. It is almost needless to say that sun heat is very much preferable to that derived from fire, and with this view continual watchfulness is requisite to utilise the sun heat, as far as possible, by not allowing the afternoon to get too far advanced, so that the sun has got off, or almost off the glass, before taking off what little air may have been given. In fact, with a good light stove, the plants well up to the glass, and a constant look-out for the weather, I have frequently been able to get through this month with the admission of very little external air, to the evident benefit of the plants.

Shading.—The shading of stoves, like that of all other structures, can only be looked upon as a necessary evil, never to be employed except when and where unavoidable. In the stove the more or less necessity of shading will be determinable by the description of the subjects grown and the position of the house. A house of any form facing the south, where the sun in the middle of the day comes directly upon the occupants needs shading for a time on the sun-exposed side for almost any kind of plants, whereas, in the case of structures placed in the opposite direction, the bars and rafters break the force of the sunshine, and this, coupled with its striking them obliquely, much reduces the necessity for shading, and, with houses so situated, I for some years ceased altogether to shade such plants as *Ixoras*, *Dipladenias*, *Gardenias*, *Rondeletias*, *Allamandas*, *Bougainvilleas*, *Gloxinias*, *Achimenes*, *Euphorbias*, or anything with stout foliage, excepting that when some of these were in bloom they were very thinly shaded, with a view to shield the flowers. The increased quantity of bloom produced and the general appearance of the plants proved non-shading to be an advantage. The large numbers of tender-leaved, fine-foliage subjects, such as *Cyanophyllums*, *Sphærogygnes*, *Caladiums*, *Alocasias*, and some *Palms* absolutely require shade when the sun is powerful, as otherwise, if the foliage be not positively burnt, it gets so brown as to make it unsightly. It is much the best plan to put those plants, both flowering and fine-leaved, that want shade, at one end of the house, using shade there only. It cannot be too often impressed upon beginners in the cultivation of stove subjects that the blinds in all cases should be movable, and that they should never be down before there is absolute necessity for it, nor to fail in rolling them up as soon in the afternoons as they can be dispensed with. The material used should also not be thicker than just to break the force of the sun's rays.

Achimenes and Caladiums.—*Achimenes* for late blooming that have not been started, should at once be put into heat. Those first started in pans will shortly be ready for placing in the pots or hanging baskets in which they are to be grown. For large houses

there is nothing more effective than these plants in good-sized wire baskets suspended from the roof. For general purposes pots of small or medium size will be found the most useful. Their rapid growth necessitates a liberal supply of water through the growing season, for which reason see that the drainage is efficient. Any *Caladiums* not yet started should immediately be shaken out and repotted. These will be serviceable, retaining as they do their leaves fresh and in good condition through the autumn. If there be a deficiency of any kind when the young crowns have got 6 in. or 8 in. in length, they may be cut out from the tubers, placed singly in small pots, and treated as is usual in the case of cuttings, in which way they will shortly get established.

General Propagation.—Cuttings of most stove plants root freely in a much shorter time than those of the generality of greenhouse subjects. Many of the hardwooded plants that were recommended to be headed down some time back, will soon have made shoots that will furnish the best kind of cuttings, as, when they get a few inches long, if severed at the junction with the old stem, they are in the best possible condition for making good plants in a short time, as these shoots have always a less disposition to flag when not so closely confined under bell-glasses or in a propagating frame, and are comparatively less liable to damp off than cuttings made from growth further developed. For general decoration, small and moderate-sized examples are of more use than large specimens, and, in the case of quick-growing plants, it is well to err on the right side by having enough of *Gardenias*, *Clorodendrons*—both shrubby and climbing—*Allamandas*, *Dipladenias*, *Rondeletias*, *Vincas*, *Tabernamontanas*, *Stephanotis*, *Rogieras*, *Medinillas*, *Loncias*, *Lasiandras*, *Hibiscus*, *Hoyas*, *Aristolochias*, *Bougainvilleas*, *Apelalandras*, *Æschynanthus*, and *Abutilons*; of these sufficient cuttings for whatever may be required should at once be put in. Young plants of the majority of soft-wooded stove subjects, being of quick growth, are better than old ones. Cuttings of *Impatiens*, *Meyenias*, *Pentas* [earne], *Torenia*, and *Eranthemums*, should likewise be put in in all cases, seeing that they are clear of insects.

Propagation of Fine-leaved Subjects.—Cuttings of *Cyanophyllums*, *Aralias*, *Crotons*, *Dracenas*, *Ficuses*, *Hippomane spinosa*, *Rhopalas*, and *Sphærogygnes*, should be taken off as soon as they are large enough for the purpose. In the case of most of them the young shoots that are formed after heading back root much more readily than the points of the strong branches, especially when obtained with a heel, as they can be got at this stage of their growth. All the larger-leaved species of this description require sufficient room in the cutting pots, or they are liable to damp off, and every effort should be made to retain in perfect condition the whole of the leaves which they possess, as upon being clothed with perfect foliage down to the base depends their appearance afterwards. Plants that require to be increased by division of the crowns are easiest managed about the time when they commence growth. Some of the species of *Pandanus*, *Mosses*, *Hedychiums*, *Cyperus*, *Anthurium*, &c., may therefore now be divided as wanted, potting the pieces separated singly and keeping them close until they have become established.

Ardisia crenulata.—Both the red and white fruited varieties of this plant, when well managed, are amongst the most useful berry-bearing subjects which we have. Where young shoots are obtainable they should now be propagated, putting them separately in small pots, or, if in larger numbers together, taking care that they are so treated that whatever leaves they possess may sustain no injury. For table or room decoration they are deservedly great favorites, lasting as they do with care in good condition for months. They are equally suitable for standing about on the side stages of stoves, intermediate houses, and warm conservatories, where, if slightly elevated above their associates, they are very effective; but if considerable numbers are wanted, it takes some time to get up a stock from cuttings, and beautiful plants may be raised from seed, which if sown now in pots or pans, drained and filled with open sandy soil tolerably compressed, the seeds slightly covered and placed in a brisk growing temperature, after some time the seedlings will make their appearance, but they are slower in all stages than many other plants.

Bouvardias.—A sufficiency of outtings should at once be got in; they will succeed either made from the roots or shoots; where enough of the latter are not at hand, a good-sized plant or two will provide a number of the former, using the stronger pieces in bits from $\frac{1}{2}$ in. to 1 in. long, putting them in pots or pans partially filled with sandy soil, the upper portion being sand alone, and inserting them about level with the surface of the material. If kept moist and warm, they will soon commence to grow, and they should be placed singly in small pots as soon as large enough to handle.

Greenhouse.

Azaleas.—Those that were forced early, and their flowering now over, should at once be placed in heat to encourage a continuance of the growth, which would be more or less excited by the warmth to which they were subjected, in order to bring them into bloom. Sometimes these early forced plants, after flowering, are for a time submitted to cool treatment, with a view to their being placed in a growing temperature along with those that bloom later. There are two reasons that point to this treatment being wrong; first, it necessarily has a stunting influence upon the shoot growth; secondly, the opportunity is lost of getting their growth made early and the bloom buds formed, by which means there will be little difficulty in getting them into flower at a correspondingly early period next winter with comparatively less heat, a matter of considerable importance, whether the plants are required for ordinary decoration or the flowers for cutting. Previous to putting them into warmth they should be closely looked over to see that they are free from thrips; should any trace of these be found the plants ought to be either fumigated, dipped in Tobacco water, or syringed with that liquid. Any that require larger pots it will be better to defer moving till some further progress is made in the growth of the young shoots, as, until this takes place, the roots of Azaleas do not begin to move.

Heaths.—Directions were recently given as to the potting of hard-wooded plants generally, but Heaths need to be treated exceptionally in this matter. Although the roots of most of the species and varieties are extremely fine and impatient of excesses of any kind, still the majority of the garden hybrids naturally form such quantities of fibres, that to keep the plants in the vigorous condition necessary to their being clothed with healthy foliage and abundance of bloom, they require larger pots than any other plants of such comparatively slow shoot growth, and wherever they are allowed to remain with their roots too much confined, they invariably get into a stunted state, from which they rarely if ever recover. This does not apply alone to the hard-wooded section, but also to the softer, winter-blooming kinds, which, to keep them in a healthy condition beyond the size of the ordinary trade-flowering plants, must have a sufficient amount of pot room. I have seen the winter-blooming *Erica hyemalis* when planted out in a prepared bed on the floor of a light greenhouse, attain a height of 5 ft. and as much through, flowering so profusely every season as to permit of the branches when in bloom being cut in pieces 1 ft. or 15 in. in length. I mention this to give some idea of the vigour that plenty of root room gives to plants for which it is often supposed very limited root space is sufficient. The majority of Heaths like peat of a closer and heavier character than most other hard-wooded stock. Early autumn for the potting, especially of large Heaths, is preferable to spring, but where the stock, large or small, is likely to suffer from want of additional root room before the summer's growth is completed, it is much better to pot now, in all cases paying particular attention to the efficiency of the drainage, and see that the soil contains sufficient sand to keep it sweet and permit the water to pass through it when rammed tightly into the pots in the way necessary in potting Heaths so as to grow them well. To still further insure porosity, a moderate sprinkling of clean pot-shreds, broken about the size of horse Beans, incorporated with the soil, will be an advantage. After potting restrict admission of air and prevent the atmosphere of the house in which they are placed getting too dry.—T. BAINES.

Flower Garden.

Auriculas.—These, when in flower, suffer more readily from the effects of sunshine than almost any other flower; it is, therefore, necessary to remove those that have any pips open to a place by themselves, to avoid shading plants that are in flower. Old-fashioned growers objected to placing sticks to the trusses; they were anxious to show that the flower stalks were so stout and elastic as not to require any such extraneous aid. Some kinds, however, require a little support, and I do not scruple to give it. I use for the purpose small Willow twigs cut into suitable lengths. If the work be properly done the sticks will scarcely be visible. When the plants are being moved, or subjected to any kind of manipulation, one must be careful not to rub any of the white powder or farina from the leaves or flower stalks.

Carnations and Picotees.—The Tree or perpetual flowering varieties of Carnation require attention at this time; they produce plenty of blooms when aided by a warm greenhouse temperature; the stems should be tied to sticks, else the weight of the flowers bends them down, and they snap at the joints. Some of the large, full flowers are very beautiful, but nearly all of them burst the calyx, unless it be tied round before the flowers open with a strip of matting. See that a goodly number of cuttings of all the varieties are put in for flowering from January to June next year. The very smallest offsets, if inserted in sandy soil, will soon form roots on a gentle hotbed,

Hollyhocks.—Instructions as to planting out choice-named varieties have already been given in THE GARDEN (p. 208); see, therefore, that this operation is carried out as soon as the plants have been inured to the open air. Later-propagated plants should be placed in cold frames when they have become well established, and they must also be speedily hardened off. For ordinary decorative purposes seedlings make the best display, and if the seeds be saved from the finest double flowers there will be comparatively few inferior varieties amongst them. If the seeds be saved from varieties of decided colours, without crossing, the seedlings will vary but little from their parents, and half of them will be as good.

Pansies.—A few pots may be removed from frames to the greenhouse, where their agreeable perfume and rich colours will be appreciated. They ought not to be placed there until they are in flower, as, if at a distance from the glass, the growths soon become drawn up weakly. Cuttings may now be put in to produce late flowers of a better quality than can be obtained from old plants. The flowers of show Pansies very speedily deteriorate in quality unless all of them are picked off at frequent intervals in order to allow the plants to have a short rest. The growths ought to be thinned out, and the surface of the soil dressed with rich compost, when the young shoots may be pegged down over it.

Primula cortusoides, and also all hardy Primroses, give the greatest satisfaction when grown under glass; they can be attended to at the same time as Auriculas, and much in the same way. The great advantage of growing such plants in pots under glass is, that the flowers can be inspected in all sorts of weather, and they occupy such a very small space, that they may find a place in the smallest gardens. We had a small bed of *Primula cortusoides*, which stood out without any attention for several winters, but the plants were ultimately lost. We are now planting out a bed of the white, lilac, and red forms of *P. amoena*; planted at this time, they will flower as strongly as the plants in pots.

Delphiniums, Phloxes, and Pyrethrums in beds, if they have not been replanted, should now be attended to without delay, as some of them have made considerable growth. Delphinium seeds, if sown now in heat and well attended to, will produce flowers in succession to the old established plants. *D. formosum* and *D. Madame Henri Jacotot* are two of the very best; these seeds should be sown in spring. The one has bluish purple flowers, the other blossoms of a beautiful clear light blue.

Tulips.—With us the florist section of Tulips in beds are making exceedingly strong growth, although late in comparison with that of the last few years. On the first favourable opportunity we will surface dress the beds with rotten manure; this acts in two ways—it prevents evaporation, and keeps an equable temperature round the roots.—J. DOUGLAS.

Hardy Fruit.

If pruning of all kinds, staking, tying, and nailing be finished, as by this time they should be, attention must now be directed towards devising ways and means for protecting the trees when in blossom. Here the first Apricot flower opened on the 10th; it was full and as well developed as if we had had no hard and protracted winter, a fact worth recording, as previously we had certain misgivings in the matter, having found a few Pear and Cherry buds blackened right through. A recurrence to sunless days, and bleak "north-easters" has, however, had the effect of retarding any further expansion of fruit buds, and though it will now be late ere Peas, Peaches, Cherries, &c., open, still the necessary protection should be ready if required. Though the trees are backward, any grafting that has to be done had better receive attention at once, for the double reason that there is now more leisure for doing it, and that it is very probable that when a change does take place growth will be very rapid, and, consequently, a good grafting time be very limited. Any trees that are languishing through poverty of soil, or over-fruiffulness, may be rendered vigorous by now removing the surface soil right down to the roots and replacing the same with good maiden loam, and a liberal admixture of well-decayed manure. Well press the soil about the roots and finish off by a thick coating of manure on the surface as far as the roots of the tree extend. The surface-dressing and manuring of Raspberries should no longer be delayed. No hardy fruit crop so soon shows the good results of manurial dressings, or gives better returns than these, and this fact should be an incentive to the accomplishment of the operation. Thin out straggling branches or boughs, and eradicate the suckers from round about the stems of Nuts. The value of the sticks thus removed for various purposes will pay for the labour, not to mention the benefit accruing to the trees, as root suckers are little better than parasites, for they live on the vitality which would otherwise aid in the production of more or better fruit.—W. W.

Kitchen Garden.

Here, in the south-west of England, the past fortnight has been a glorious seed time, and all our kitchen garden crops which require to be got in early have been sown. Onions, Parsnips, Early Horn Carrots, Peas, Broad Beans, Radishes, and Lettuces, have all received attention in that way; Shallots, Garlic, and a good batch of early Potatoes have been planted. All of these, where not yet sown or planted, should have immediate attention, and every endeavour should be made to bring up arrears of work, the result of the long winter, from which we have hardly yet escaped. Preparation should be made for planting the principal plot of Potatoes; deep tith, moderately enriched soil, thorough drainage, head-room for the haulm by planting the tubers a good distance apart, and medium-sized seed tubers with but two sprouts, constitute all that is required in order to ensure success. Peas and Broad Beans should be sown successively, according to the demand. As a rule, as soon as one lot emerges above the soil, another should be sown. Earth up and stake Peas, and on the cold or windward side screen them with Laurel or other evergreen boughs. Sparrows and chaffinches at this early season have an insatiable taste for the tender tops, and when once they commence their attack, nothing short of annihilation will deter them. Radish, Turnip, Broccoli, and Cabbage seeds are equally dainty morsels to these pests, and, unless netted over as soon as sown, we betide them as soon as the first chaffinch finds them out. Cauliflower plants wintered in hand-lights should now be finally thinned out, about three of the best being left to mature on the ground; the remainder should be carefully removed with balls of earth, and planted in the warmest available position. A deep drill helps to ward off cutting winds, and as soon as the plants get sturdy it can be filled in level, and no other earthing up is required. Prick out Cauliflowers sown in heat a few weeks ago; a south border and a little evergreen branch protection are all that is required. Such plants will make a good succession to those now being planted. Brussels Sprouts and early Cabbages should be treated in a similar manner. As to other seeds to be sown, planting to be done, and other routine work, consult *THE GARDEN* (p. 167 and 208). The heavy work now requiring attention will be the digging out of Celery trenches, clearing off stems of Broccoli, Brussels Sprouts, and other winter greens, and preparing the ground for Potatoes, Spinach, Peas, Runner Beans, and the like. Let all the walks and edgings be put in good order, and maintain neatness at all times by arranging that wheeling over the walks or all other heavy traffic be done, either on frosty mornings or during the prevalence of drying winds.—W. W.

Extracts from my Diary, March 24 to 29.

FRUIT.—Top-dressing pot Vines. Tying and stopping Muscats first time. Shifting Strawberries. Grafting Gros Colman Grape on Pearson's Golden Queen, and Harewood Muscat on the Trebbiano. Looking over Apples in fruit room. Disbudding Peaches in second house. Sowing batch of Melons. Planting Pines in frame. Disbudding Nectarine at end of late Vinery. Shifting ripe Strawberries into cold house. Thinning Grapes in pot Vinery. Emptying Pine pit and mixing manure and leaves for hotbed. Potting Vicomtesse Héricart de Thury Strawberries for fruiting at Christmas. Watering cold Peach houses. Tying Muscat Vines. Getting in fresh batch of Strawberries into Vinery. Hybridising Cherries in cold houses. First Hamburgh Vines in flower. Peaches in cold house set; also Early Amber Cherries. **FLOWERS.**—Propagating Lobelias, Petunias, and Ageratum. Sowing Phlox seed. Putting in cuttings of Euphorbia jacinthiflora, and sowing seeds of Poinsettias. Shifting Alternantheras, Mesembryanthemum, and Petunias out of cutting pots into 3-in. ones. Sowing Primulas and Cinerarias. Nailing Camellias on Peach house walls. Putting Primulas into cold frame. Pricking out Pyrethrums into boxes. Boxing Iresines and Lobelias. Breaking up old stools of Begonia Weltoniensis, and potting them; also potting Caladiums and fancy Pelargoniums. Tying Roses and freeing them from smokers. Potting Miles' hybrid Mignonette. **VEGETABLES.**—Sowing Sweet Basil and French Beans; also main crop of Onions and a little Lettuce. Planting Potatoes for exhibition; also batch of French Beans. Sowing Leeks. Preparing ground for planting show Potatoes by giving it a dressing of ashes and sawdust. Planting McKinty's Pride Potatoes.

Potatoes and Frost.—"A. D." (p. 206) is right so far as the frost question goes. But I cannot admit that Myatt's Kidney and Gloucestershire Kidney are identical with the old Ashtop. I have every respect for dear old Chiawick, and also for the authority of the fruit and vegetable committee—still, I only take their opinions for what they are worth.—R. GILBERT, *Burghley*.

THE LIBRARY.

POTATOES—HOW TO GROW AND SHOW THEM*.

As a skilful cultivator and a most successful exhibitor of Potatoes, Mr. Pink is entitled to give full and free expression to his views concerning them, and out of his experience, aided by helps from other sources, he has produced a book that promises to be most useful. It is, perhaps, unfortunate that the title should so imperfectly foreshadow its contents, for, besides directions for growing and showing the Potato, there are chapters upon the history of its introduction to this country, its botanical character, the cause of the disease, suggested remedies, the Potato as an article of food, and other matters of much interest. Thus the book is more comprehensive than its title indicates, whilst on the other hand, it falls somewhat short of what a book upon the Potato should be. This, however, is a defect that time may remedy, as it is a singular fact in relation to this valuable esculent, that information respecting it is certainly on the increase, and with new sorts and fresh experience, the phases of its culture are continually changing. On the special topics of the book—growing and showing—Mr. Pink treats fully, devoting chapters specially to the preparation of the soil and to manures and manuring. As regards manures, he enters into some elaborate chemical details, and appears to favour the application of special manures rather than our farmyard composts. In one respect there is a seeming inconsistency in his statements, as in one place he says, "Poor soils never produce good crops, nor are the Potatoes from them of first-class quality;" and later on we have, "The quality of the tuber is never so good when stimulating manures have been applied to the growing plant." If Potatoes grown on poor soils are devoid of quality, in an inverse ratio those grown on rich land ought to be specially good; but such is not the case, and the wisest grower is he who avoids all rich manures, and yet has his land in fairly good condition, fertile in phosphates and other Potato constituents. The chapter devoted to planting and after cultivation, is the most exhaustive and practical in the book, because it consists largely of the author's own experience, and details the various methods of planting, as applicable to different soils and positions. The ridge system of planting is recommended for stiff, heavy lands, and the flat system for ordinary soils. It may not, however, be understood, that when strong growing kinds are planted on the flat system the same distance apart as when planted on the ridge, the result is about the same, as each plant develops into a ridge in the end, if the rows be properly earthed.

Growers for show are often greatly troubled with the wireworm, which will pierce the tubers and greatly injure them. Mr. Pink recommends the placing of pieces of rape cake in the rows at intervals, as the worms will attach themselves to these baits, and may be removed in considerable numbers with the pieces of cake about the time when the plants are through the soil. This is no doubt a much more practical plan than merely rolling the soil, as no amount of pressure thus applied, short of absolute crushing, would destroy this troublesome pest.

Earthing-up is recommended to be done gradually, and not all at once, as the gradual gathering of soil about the roots tends to the formation of tubers from the stems. Of course it is evident that if Potatoes are being grown for exhibition much more care and attention must be given to the plants than would be necessary under ordinary culture.

The concluding chapter is entirely devoted to exhibiting, selecting tubers for that purpose, packing, and staging them, subjects also treated of in a small pamphlet just issued by another famous exhibitor, Mr. Porter, of Old Meldrum. Mr. Porter's exhibits have always been remarkable for natural polish, and this he chiefly attributes to the presence of a good dressing of pounded charcoal sown with the seed tubers. Mr. Pink's book is illustrated with engravings of some well-known Potatoes; it is neatly got up, and contains a large amount of useful information concerning the subjects on which it treats. A. D.

* "Potatoes—How to Grow and Show them." By James Pink. London Crosby Lockwood & Co.

GARDEN DESTROYERS.

THE BROWN-TAILED MOTH.

(PORTHESIA AURIFLUA.)

THE caterpillars of this moth are very similar in their habits to those of two species which we have already described, viz., the small ermine moth and the lackey moth, though it does not belong to the same family as either, but to the family Arctiidae. Fortunately, this insect is seldom so commonly found as the other species, but occasionally they appear in great numbers, when the mischief they commit is proportionately great. They feed on a great number of different trees; their favourite food appears to be the leaves of the Oak, Elm, White Thorn, Black Thorn, and most fruit trees. Like many insects, in some years they are much more abundant than in others, and having been particularly abundant one year, are perhaps hardly to be seen for several years afterwards. This species was so abundant particularly near London in 1872, that, according to Mr. W. Curtis, the greatest alarm was occasioned, not only for the trees and hedges, but also for the corn and Grass crops; one shilling per bushel was paid for the webs of these caterpillars, which were burned in the presence of the churchwardens or other parochial authorities. Prayers were offered up in some churches that the country might be delivered from

Caterpillar of *Porthesia auriflua*.

this plague. In such numbers were these pests, that eighty-one bushels were collected in one day in the neighbourhood of Clapham. Though of late years nothing of this kind has been experienced, still great injury has been done, particularly to fruit trees, at various times by this insect. Unfortunately, there is not much that can be done to lessen its numbers, except by waging war against it on all possible occasions. The moths, on account of their size and colour (pure white) are easily seen, and as they are very sluggish during the day, may easily be shaken from the trees and destroyed; wet and cold weather kills great numbers of them. Many of the eggs are destroyed by a minute, four-winged fly, hardly visible to the naked eye, which lays an egg in each of those of the brown-tailed moth, which are soon destroyed when the little grubs are hatched. As the eggs are laid in clusters on the under side of the leaves, they can easily be detected, if carefully looked for. The caterpillars may be found at the points of the branches sheltered in their webs formed among a few leaves. During the winter these bundles of leaves should always be cut off and destroyed. In the spring the trees should be well looked over, so that any injuries which are being committed may be detected, and at once checked. The caterpillars are, unfortunately, so hairy that birds seldom touch them; they should always be carefully handled, as their hairs come off very easily and stick into the skin, causing a considerable amount of irri-

tation. They suffer much, however, from the attacks of several species of Ichneumons, which assist very much in keeping down the numbers of this insect. The balls of leaves containing the chrysalides should be carefully destroyed. The moths are first seen towards the end of June, the females soon afterwards begin to lay their eggs. The care they take in this proceeding is very remarkable and interesting. Having selected a suitable position, generally on the underside of some leaf, she deposits her eggs, about 200 or 300 in number, and yellowish in colour in a heap, which she carefully covers with the tawny-coloured hairs with which the end of her body is provided. These hairs she is said to pull from herself by means of a small pincer-like organ which the extremity of her body is provided with. The caterpillars are generally hatched in August, and, at first, only feed on the softer parts of the

Moth of *Porthesia auriflua*.

leaves, which they somewhat curl up by spinning threads from one side to the other, under the shelter of which they live secure from the attacks of foes, and protected from the weather. When this leaf is reduced to a skeleton, the caterpillars remove to another, and as they increase in size, they begin to form a regular nest by fastening several leaves together, and covering them with a thick web; they attach the nest very securely to the branch, so that when the leaves die over which it is made, they cannot fall and carry it with them. The caterpillars now seek their food from the nearest leaves on the branch, and only return to the nest for shelter; they change their skins for the first time in August, and leave off feeding in September or October, and soon become torpid, in which condition they pass the winter within their nests. From experiments which have been made on them, they seem to be able to withstand almost any amount of frost without injury. The same influences which cause the buds to open in the spring seem to reanimate the caterpillars, and they at once begin feeding on the opening buds. It is at this season that they do the most injury to the fruit trees. At the end of May they change their skins for the third time, and then spread themselves over the trees, no longer keeping together in any way or returning to the nest. In June they roll up several leaves with a brownish web, within which they undergo their change to the chrysalis state; sometimes several chrysalides may be found within one web. The moths measure about $1\frac{1}{2}$ in. across the wings, and are pure white in colour, with the exception of the last three or four joints of the body, which are brownish. The antennae are very deeply toothed in the males; the thorax and body are densely covered with long hairs, which, at the extreme end of the latter, form a kind of tuft. The caterpillars, when fully grown, are about $1\frac{1}{2}$ in. in length and of a brownish-black colour, with tufts of dark grey hairs; on the back of each joint, with the exception of the first, are two pure white spots, forming two longitudinal rows down the back of the caterpillar; between these rows is a double bright red line, and on each side of every joint is a reddish-brown tubercle, those on the same side being connected together by a red line. On the back of the fourth and fifth joints there is a fleshy hump; on these, and on the middle of the back of the other joints, as well as on the side tubercles, there are tufts of long grey hairs. The first three joints, the sixth, seventh, eighth, ninth, and last joints bear legs. The chrysalides are dark brown surrounded by a coarse brownish web. S. G. S.

Myosotis dissitiflora Injured by the Weather.—If "A. D." (p. 202) will winter this Forget-me-not under a north wall, he will find it much less liable to be injured by frost. I have a quantity of the true variety, all struck from cuttings put in last June, looking fresh and quite green, but not yet in flower.—R. GILBERT, *Burghley*.

Glass Labels.—Owing to upright wooden labels looking so very ugly in an Alpine garden, I procured from a glass manufactory the refuse of green bottle glass in large lumps. These were beaten to pieces about 1 in. square of irregular form, and the names of the plants were written on the flat side with a diamond. These labels are of course very durable, look well, and are not disagreeably conspicuous.—O. F. AUGSBURY, *Bavaria*.

NOTES FROM KEW.

Hardy Plants.—A charming companion to the many coloured forms of the ordinary Hepatica is the large Hepatica (*Hepatica angulosa*). It is of tufted habit, growing nearly a foot high and as much through. It has coarsely-toothed, heart-shaped leaves, and produces an abundance of blossoms over 1 in. across, and of a beautiful sky-blue colour. It is admirably adapted for partially shaded borders or even fully exposed if it be planted in stiff soil. It is a native of Transylvania, and, though an old introduction, is still far from being common. Another beautiful Windflower is *Anemone Paleatilla*, commonly called the Pasque Flower. It is one of our most ornamental indigenous plants, though now somewhat rare. The whole plant is covered with soft, silky hairs; the leaves are deeply cut into numerous narrow divisions, and the blossoms, which are 3 in. across, are of a pale purple, with a bright yellow centre. It inhabits dry chalky hills and similar exposed places throughout Europe and Siberia. Among the Hellebores are some really desirable kinds, such as the Hungarian *H. atrorubens*, which grows about 1 ft. high, and bears fine dark purple flowers. Much resembling it is the Abchasian Hellebore, which apparently differs in being taller, the flowers smaller and more cup-shaped, and the flower stalks being more leafy. The Olympian Hellebore (*H. olympicus*) sometimes called *Kamischatensis*, is a handsome kind with blossoms almost white. There are also some labelled Berlin seedlings, one of which is especially noteworthy; its flowers are purple and very copiously spotted with dark red; the sepals moreover differ from those of the others, inasmuch as they are decidedly pointed. Most probably this variety is the result of a cross between *H. abchasicus* and the Spotted Hellebore (*H. guttatus*). The many forms of the Green Hellebore (*H. viridis*) are also well represented, but as they are not interesting generally, further comment in reference to them is unnecessary. Turning to the Crocus beds we have, in addition to those enumerated last week, several other little gems, comprising *C. veluchensis*, or as it is called in some collections, the White-beaked Spring Crocus (*C. vernus leucorhynchus*), a name very aptly applied, as the tips of the petals are of the purest white, appearing more conspicuous on account of the deep, purple, V-shaped mark immediately below it similar to that in *C. bantianus*; the lower part of the flower is of a lighter hue. As yet it is very rare in cultivation. It is a native of Greece and Transylvania. It may not be out of place to add that the figure bearing this name in the "Botanical Magazine" (tab. 6197) does not represent the plant in question, but the plate by Dean Herbert in the "Botanical Register," 1817 (tab. 4) is an excellent portrait of it. *C. Olivieri* (syn. *C. Aucheri*) a pretty yellow-flowered kind is distinct on account of its globose flowers and broad foliage. Some complain of its being a shy bloomer, but in a stiff loam and fully exposed it is remarkably the reverse. It is found in Greece and Asia Minor. The elegant little *C. stellaris* is supposed to be a hybrid between *C. latens* and *C. susianus*, and, judging from the colour, this origin is very apparent, as it has the dark marking of the latter disposed in fine lines on the outside. *C. Siebe* and *C. reticulatus*, from its exceptionally-netted bulb coats, are old but very desirable kinds; the former particularly so, as it comes in so early and keeps up a continuous show. The Juniper-leaved Saxifrage (*S. juniperifolia*) is an exquisite Alpine Gem, forming dense, cushion-like tufts of sharp-pointed Juniper-like leaves, and throwing up about 2 in. high, little tassell-like heads of golden-yellow flowers. Such a distinct kind needs no pen to recommend it. The typical form of the netted Iris (*Xiphion reticulatum*) has now expanded its first flowers, and, as remarked last week, is much superior to the variety *Krelagei*, though later. This remarkably handsome bulbous plants should be accommodated in every garden, be it large or small. A sunny border, consisting of a good sandy loam evidently suits its requirements capitally. Those who possess it should keep a good look out for the ripe seed pods a few months hence, as the seed readily germinates if sown as soon as it is ripe. *Trillium nivale* is a rare little Alpine species, remarkably distinct from the other cultivated kinds on account of its small size, and also its flowers being borne quite erect. It is not more than 2 in. in height, and has a whorl of three small pale green leaves. The blossoms are large for the size of the plant, being 1 in. across, of a triangular outline, and of a pure white colour. It inhabits shady Pine woods in the Eastern States of North America.

Orchids.—One of the most singular as well as rare of the numerous family of Dendrobiums is the tongue-leaved kind, (*D. linguaeforme*) found in the vicinity of Moreton Bay. It has oval, tongue-like leaves, 1 in. long, and thick in proportion, and produces erect racemes of pure white blossoms with attenuated petals, so characteristic of the majority of the North Australian Dendrobies. It apparently succeeds well when merely fastened to a block of cork or wood. *D. primum* is a very showy kind, having a pendulous habit and flowers over 1 in. across with a rounded, crisped lip, and uniformly of a deep rose colour; the form *giganteum* is desirable on account of its

superior sized blossoms; both are natives of the East Indies. *Odontoglossum triumphans* is one of the finest of its section. It has flowers quite as large as those of *O. luteo-purpureum*, but the markings are far brighter. It was discovered about a dozen years ago by M. Linden at high elevations in New Granada. The rather shy-flowering Alos-leaved *Cymbidium* (*C. aloifolium*) is very conspicuous with its drooping spikes of dark chocolate and white blossoms developed from the base of the narrow, leathery leaves. It is a native of the East Indies and is also known as *Aerides Borassi*. The sweet-scented *Odontoglossum* (*O. odoratum*) at once reminds one of *O. gloriosum*, but its smaller and sweetly-scented blossoms render it very distinct. It is found at lofty elevations in Merida, and, as yet, appears to be somewhat rare in collections.

Stove Plants.—*Dalechampia Roeziana* is a very ornamental stove plant belonging to the Spurgewort family. It has a dwarf, shrubby habit with leaves of the size and form of the leaflets of the common Horse Chestnut. The point of beauty consists in the two heart-shaped floral leaves, as in the Bougainvillea, which are, in the type, of a pale pink colour enclosing a tuft of bright yellow flowers. These have the consistence and veining of true leaves, therefore last a very considerable time in beauty. The variety *rosea* is a decided improvement, as the bracts are larger and of a deeper shade; the white form, too, is desirable for the sake of variety. The showy *Pancratium* (*P. speciosum*) a native of the West Indies, is one of the finest of the genus, being of bold habit with spreading, ample foliage, and producing several stout flower stems terminated by an umbel-like cluster of about a dozen blossoms having narrow segments 6 in. across and a funnel-shaped corona, the whole of snowy whiteness save the golden-tipped stamens; it moreover emits a delicious perfume. In the Cactus house the very handsome *Cereus Mallisoni* is flowering profusely. It is apparently of pendulous habit, and is grafted on the magnificent night-flowering *Cereus* (*C. Macdonaldii*). The flowers are large, of a deep scarlet colour, and though they are rather fugitive they are borne in continuous succession.—W.

NOTES OF THE WEEK.

New Himalayan Primrose.—There is in Mr. Ware's nursery, just coming into flower, a charming new Primrose, a Himalayan species under the name of *Primula rosea*. It is quite new to cultivation, but known long ago, as it is figured in "Royle's Illustrations of Himalayan Botany." It originated from seeds distributed from Kew in 1877. The colour is a pleasing shade of rose without the suffusion of a purplish tinge so often seen, and the pipes are each the size of a sixpence. The foliage is of a bright emerald green and appears along with the flowers. It is, we consider, one of the most charming additions to hardy plants that we have had for some years, and, being of a tolerably robust constitution, it will soon become common.—W.

Daphne Mezereum.—Bushes of this now form very pretty objects on the Grass or in shrubby borders, being, as usual, loaded with purple flowers that are delightfully fragrant. The evergreen Spurge Laurels are, I find, most useful for furnishing beds under trees, as they flourish in positions where little else will grow, and although not conspicuous as flowering shrubs, their fragrance, especially in the evening, is very agreeable. One need not see them to be made aware of their presence.—J. G. Linton.

Platycerium grande.—There are some plants which, although by no means difficult to grow when fairly well treated, yet nevertheless never become very plentiful; to that class belongs this Stag's Horn Fern. We recently saw several fine examples of it in Messrs. Jackson's nursery at Kingdon, where, growing on pieces of wood on which there was a sufficient quantity of material for the roots to extend in and be kept moist, plants of it thrive well, and measure from 3½ ft. to 4 ft. across. They are in an Orchid house, kept moderately warm.—P. G.

Rhododendrons and Camellias at Glasnevin.—The Rhododendron and Camellia house at Glasnevin is just now unusually gay and interesting, while most plants out of doors still have a wintry look. On R. arboreum and its varieties there are hundreds of flower heads, and standing very conspicuously amongst them is a fine plant of R. Falconeri, a mass of bloom. R. Dalhousiae is just opening its first buds, and in a few days it will be a sight worth going miles to see.—E.

Gesnera macrantha.—This is one of the brightest and most desirable medium-sized, winter-flowering stove plants grown. We noticed it the other day in the Kingston Nurseries beautifully in bloom; it seems to be a stronger grower than the old but still handsome *G. Cooperi*. It has larger foliage, stout short stems about 1 ft.

in length, and it bears on the top of each from twelve to twenty of vivid red, large, tube-shaped flowers. It associates well with other plants, and is very conspicuous at this season. A few examples of this *Geniera*, along with winter blooming *Begonias*, would make any stove look gay.—P. G.

Green Hariicot.—We have received from M. Godefroy-Lebœuf specimens of a very curious variety of Hariicot obtained by M. Chevrier. It is small, and has the rare merit of always remaining perfectly green. It is a heavy cropper, and, when cooked, found to be excellent.

Large-leaved Saxifragas.—These, which are more generally known under the name of *Megasea*, are highly decorative spring-flowering plants, particularly when they are treated as a speciality, as is the case at the Exotic Nursery, Tooting. Here are very fine examples of the many forms of *S. ligulata* in full beauty; one kind named *pulcherrima* more especially arrested attention, being very floriferous and of a delicate blush tint. The hairy-leaved kind (*S. ciliata*) and its white-flowered variety are also in fine condition, and later on they will be succeeded by such rarities as *S. purpurascens* and *S. Stracheyi*, both very scarce Himalayan plants.—W.

Seedlings of Iris Kämpferi.—Mr. Barr has added to his collection of Irises the whole of Messrs. Von Siebold & Co.'s stock of seedlings, consisting of selections from the best types of double, semi-double, and single varieties of *Iris Kämpferi*, and as it is his intention to distribute these plants at once, a good opportunity is offered of securing some fine varieties which may reasonably be expected to exist amongst them. Mr. Hovey, whose arrival in this country we announced the other day, states that some of the varieties which he has recently grown are truly magnificent, both as regards colour and size of flower.

Orchids at Garibaldi Villa, Tottenham.—The following have been, and still are, beautifully in flower, viz.:—*Cattleya Trianae*, C. Mendelli, C. Mossia, and C. amethystoglossa; *Cymbidium Mastersi* and C. eburneum; *Cologyne cristata* and C. speciosa; eighteen kinds of *Lady's-slippers* and as many *Dendrobies*; *Dendrochilum glumaceum*; *Epidendrum aurantiacum*; *Vanda Cathcarti* and others; four kinds of *Lælia*; *Saccolabium premorsum*; *Renanthera matina*; various *Masdevallias*, *Phalænopsis*, and *Odontoglossums*; *Sophranitis grandiflora* and many others. Of these the *Phalænopsis* are bearing scores of fine spikes; the *Odontoglossum* house is also very gay, and the *Cattleyas* will be at their best in about a fortnight. The plants altogether look well, and have maintained a fine display all through the winter.—H. C.

Crocuses at Tooting.—At Mr. Barr's grounds we were agreeably surprised to find a good clump of the new and rare *Etruscan Crocus* (*C. etruscus*) flowering freely amongst many other choice kinds. The flowers, which are purple with faint stripes and sweet-scented, associate well with such varieties as *C. banaticus*, a fine dark kind, the delicate *C. Weldenii*, and the various forms of *C. sulphureus*, the most conspicuous of which are striatums, feathered with dark stripes; concolor, of a uniform pale yellow; and lacteus, of nearly a cream colour. A variety somewhat resembling *C. stellaris* being of a pale yellow, heavily pencilled with black on the outside, and a bright golden-yellow within, is very attractive.

Flower Shows at the Crystal Palace.—We have received a copy of the schedule of prizes offered for competition at the summer exhibition to be held on May 21. There are thirty-two classes altogether, and only first and second prizes are offered. In conjunction with this is a list of the prizes offered by the National Rose Society for competition on June 28.

The Spotted Hellebore (*H. guttatus*).—Among the rich collection of Hellebores at Mr. Barr's grounds at Tooting, we observed a remarkably fine form of the above. The flowers are as large as those of *H. niger*, spreading, nearly white, and each sepal very profusely spotted with dark purple. The sight of this handsome variety at once gives a clue to the origin of the copiously spotted hybrids that have lately emanated from the continental gardens, and with which, until lately, our acquaintance has been by means of illustrations only. Another very distinct kind is a blush-tinted form of the Olympian Hellebore (*H. olympicus*), on which account it is decidedly superior to the original, which generally assumes a greenish shade.—W.

Orchids at Southampton.—Being at Southampton the other day and having a few hours to spare, I bethought myself of an invitation given me by Dr. Ward, more than twelvemonths ago, to call and see his Orchids should I be in the neighbourhood. It was a wretchedly cold day, snow was falling fast, and glad I was when I reached Dr. Ward's residence in Harland Place, facing the public park. Although cramped for space, Dr. Ward has sufficient glass structures to contain a very choice collection of Orchids—a perfect

multum in parvo. Here I found the choicest representatives from every country and their finest forms, from *Dendrobium Wardianum* to the best of the introductions of later years; such as *Odontoglossums*, *Roezlii*, *vestiarium*, &c., and all wonderfully luxuriant and healthy. Amongst plants in flower, I noticed some grand examples of *Lycaste Skinneri*, *Sophranitis grandiflora*, *Lælia acuminata*, *Oncidium leucochilum*, *Calanthe vestita*, several forms of *Cypripedium*, *Odontoglossums*, *Zygopetalums*, and others, all showing abundance of flower spikes. Suffice it to say that I thoroughly enjoyed my short visit, and went away feeling thankful that it is possible to find here and there in one's travels an oasis, as it were, in the desert. Would that there were many such! Now that Orchids are so cheap, and cool house ones so easy to cultivate, is it not surprising that there are so few cultivators of them to be found. To the credit of Southampton, be it said, there are, I believe, several very excellent collections in its neighbourhood, whose acquaintance I had no time to make.—F. H.

Gardening (Illustrated).—This is a cheap new weekly paper, intended to meet the wants of small cultivators. All who enjoy the charms and the healthful and profitable advantages of gardening must wish these to be extended to every owner or occupier of even the smallest patch of land. Happily for most of us, the pleasures of a garden have little relation to its extent. In so far as they have, the advantages seem to be in favour of the smaller class of gardens. Many an amateur cultivating his own garden out of business hours is happier in it than he who is waited upon by a dozen gardeners. Good health and pleasure can be secured by the busy man in no way better than by gardening. Advanced as our horticulture is, much yet remains to be done: Markets and large cities to supply with the best hardy fruits; the land made to double its present produce; the worthless kinds of fruit with which the greater number of small gardens and orchards are stocked have to be removed and replaced by first-rate varieties, hardly enough to grow anywhere; the great variety of delicate vegetables now existing have to be made popular, so as to be a useful aid to our present food supplies; and there is room for vast improvement in all that concerns the embellishment of the outdoor garden throughout the year with plants hardy in our climate. The aim of *GARDENING (Illustrated)* will be to help forward progress, especially in the smaller class of gardens, and to so treat the various subjects dealt with in its pages that its words may be understood by all who read.

THE floral decorations at Windsor Castle on the occasion of the marriage of His Royal Highness the Duke of Connaught, were on a very extensive scale, and were most tastefully arranged by Mr. Jones, the head gardener at Frogmore. Messrs. Veitch and Sons had the honour of presenting the bridal bouquet, and Her Majesty and the Crown Princess of Germany also accepted bouquets from Messrs. Veitch.

THE KITCHEN GARDEN.

DALMAHOY POTATO.

I SHOULD not have thought so much misapprehension existed with regard to this Potato, as the letters of "A. D." and Mr. Baines seems to indicate; allow me, therefore, to supplement my brief note (p. 225) by a few more particulars regarding the Dalmahoy, as it is to be regretted that any uncertainty should exist regarding a Potato every way excellent, except, perhaps, that it is not one of the best disease-resisting kinds. It is an enormous and even cropper, equal, in my opinion, to any other sort in cultivation at present, and the same may be said of its cooking qualities. It forms our main second early crop here, usually coming in in July, and lasting throughout August and part of September. It was raised twenty years ago, or perhaps more, near Edinburgh, and was named, I believe, after the place where it originated. For very nearly the period just named, it has, to my knowledge, been a favourite main-crop garden variety in the Lothians, and its merits were many years ago pointed out by Mr. Thomson, of Drumlanrig, who cultivated it extensively when at Archerfield, in East Lothian, where it was generally grown as a second early, and it has been more than once described by Mr. Thomson and others as such. In all the trustworthy Scotch seed catalogues it is described as a second early sort, and one of the best and large quantities of it are distributed by the Scotch houses, while the York Regent is described as a "late" kind. In Carter's list, where the different varieties are entered in their order of earliness the Dalmahoy comes in after the Early Shaw, and the Regent as one of the latest on the list. Mr. Baines' description of the two sorts would be pretty near the mark if he would reverse their names. He has just transposed the two. The Dalmahoy has the shallowest

eyes, in which respect it can be distinguished from the Regent at a glance. What has been extensively grown for a long time in Yorkshire as the Regent, and sold by those who claim to have the true variety is unfit to lift or use when the Dalmahoy is completely ripe and cooks like a flour-ball. The Dalmahoy is much smoother than the Regent in outline, and has also very much the shallowest eyes. Messrs. Ireland & Thomson hold stock of what is regarded as the true Dalmahoy by those who have been longest and best acquainted with it. J. S. W.

Potatoes worth Growing.—On first reading "A. D.'s" comments (p. 206) upon the sorts of Potatoes which I recommended for planting, I did not notice his statement that the Regent was almost certain to show a crop more than half diseased. This is incorrect; even in the worst of seasons, if the seed be properly prepared and planted in good time (which the great majority of people who only grow such a quantity as is required for their own use can without difficulty do), the crop will be ready for taking up before the disease makes its appearance; and even if half the produce were rotten, still the grower would be a great deal better off with one-half sound and of good quality, than with the whole of most of the worthless sorts year by year recommended at a high price. If the Regents be not worth planting, may I ask "A. D." how it is that the numbers of individuals who each grow hundreds of acres in the great Potato-growing districts still have at least three-fourths of their land occupied with Regents? The character which this best of Potatoes receives from "A. D." meets with direct confutation in nineteen-twentieths of the gardens and fields where Potatoes are grown throughout the kingdom. Those who choose to grow sorts that cost high prices for mere novelty have a right to do as they please, but it is quite time that the immense number of people who only want the best should realise the fact that there are none amongst the new kinds which surpass the old ones, and very few that equal them, notwithstanding the efforts made to push them forward.—T. BAINES.

—As I have grown all the sorts of Potatoes alluded to (p. 206) over and over again, and have satisfied myself as to the exactness of what I previously said concerning them, I prefer to abide by the Chiswick decisions, which were made only after opportunities of comparison such as no private grower could possess. Seed obtained from one locality may yield a crop either earlier or later than seed of the same kind obtained from another place, and thus lead to the inference that they are distinct kinds. Moreover, true stocks are not always sent out. At Chiswick, the stocks of each sort grown were obtained from several houses or localities, and the truest possible stocks were secured in every case. Mr. Legge is more fortunate than most growers with his Regents. All through this part of the country, where that variety has been grown by the hundred acres for market, the loss resulting by it was very heavy, and, in consequence, Magnum Bonum and Market Champion are taking its place. Out of several hundreds of bushels of various sorts sold retail during the past winter, positively not more than one gallon of Regents has been asked for. Those growers are, undoubtedly, wise who prefer to stake their hopes of a winter supply of Potatoes on some kind that will not give them a crop half rotten, let its sound remainder be ever so good.—A. D.

Magnum Bonum Potato.—Last season, at seed time, a sackful of Magnum Bonum Potatoes was sent to me, and they were duly planted; one row, 35 ft. long, across one of our rich garden quarters, and six rows in the field along with Patterson's Victoria, Regent, and Compton's Surprise. I lifted the single row on the 29th of August, and it yielded twenty-six stones of the very best Potatoes I ever saw, but I cannot say that they were the handsomest. The six rows in the field turned out a grand crop, but, if anything, more ugly than in the garden. I find Magnum Bonum to be a success, but compared with Lapstone it sinks into insignificance.—R. GILBERT, *Burghley*.

Scarcity of Green Vegetables.—Green vegetables have not been so scarce for some years as they are now. A farmer here has just commenced cutting Turnip tops for the London market. Although they are of poor quality, and are out with a large portion of Turnip attached to them, they have realised very high prices. As is often the case scarcity appears to intensify the desire for fresh vegetables, and the cultivator above alluded to is besieged by applications by those who might easily have secured themselves against this dearth. Fresh, juicy Cabbages may be had the whole winter through, and a day's work for one man would suffice to provide for the wants of a small household. Supposing a good piece of Coleworts to be grown, they should, at the commencement of the winter, be laid in closely in a sheltered place, and if protected by a few boards or some litter, tender Cabbage may be had the whole winter through, no matter how severe the weather may be. I have practised this system myself

and know its value. I would therefore recommend it to the notice of those of your readers who may now be suffering from a scarcity of green vegetables.—J. CORNHILL, *Dyke*.

Early Peas in Boxes.—For the earliest crop out-of-doors we use long narrow boxes made in 8 ft. lengths. They are merely strips of wood fastened together at the ends by means of tapering pieces of wood, and there is an extra piece in the centre for increasing the strength. These boxes have no bottoms, but strips of turf are laid in them to retain the soil. The latter is about 2 in. deep, and the Peas are sown in it in January. By the time they are ready to transfer to the open border in the end of February or early in March, they will be found to have rooted through the turf. They are at once staked, and evergreen branches are placed at close intervals to break the current of harsh winds. I may add that the boxes are 4 in. wide at the bottom, 6 in. wide at the top, and 4 in. deep. In planting, a trench is taken out and the box is set in it. After such a winter as the past, I find that by this mode of treatment a good start is obtained over Peas sown out-of-doors in November. The latter, as a rule, are gappy and very much cut up.—J. G.

Veitch's Protecting and Grange's Cauliflower Broccoli.—The past winter has been very destructive to Broccoli crops generally, and kinds that usually come into use in autumn are only now becoming fit for table. We have lately been cutting good heads of Veitch's Protecting, a kind that in ordinary seasons would have been fit for use at Christmas; also Grange's Cauliflower Broccoli, a very good sort. It is rather singular how these escaped, while many of the late sorts on the same quarters are killed. Their heads were partially advanced before the frost set in, and they were frozen as hard as stone for weeks, yet the thick covering of foliage and gradual thawing under an entire absence of sunshine saved the remnant of the crop. It is somewhat singular that Cabbage plants, even in the seed beds and protected from the severest weather by a covering of snow, are more cut up than the Broccoli.—J. GROOM, *Maidstone*.

Spade Hoes.—The illustration (p. 205) pretty nearly represents a very useful garden implement in daily use in Kentish gardens; we call it a mattock hoe, as it answers the purpose of hoeing, grabbing up roots, and digging at the same time; in fact, as "I. O. U." remarks, although a rude and simple-looking implement, it is surprising the variety of uses to which it may be put. Have the land is stiff, and orchard and garden crops necessitating a good deal of traffic on the soil, light tools so useful on light sandy land are comparatively useless, therefore tools of great strength have to be provided, and the spade or mattock hoe is invaluable, as it cuts up the softest weeds or the stoutest snuckers with equal facility. Another Kentish tool for breaking up or trenching land, or digging hot gardens or orchards, is the "spud," or three-tined fork, the size and weight of which would alarm those accustomed to use Park's light steel forks, but which the labourers here prefer to a spade.—J. GROOM, *Linton*.

ANSWERS TO CORRESPONDENTS.

Laurels Turning Yellow.—My Laurels are planted on a chalk bank, with a south aspect, in about 2 ft. of good soil; nevertheless, they turn yellow, a circumstance for which I cannot account, and I should be glad of information on the subject.—B. C. W. [The chalk subsoil is the cause of the change of colour, and there is no remedy except digging out the chalk to a much greater depth, and replacing it with soil free from calcareous matter. Why not substitute Box for Laurels? Box flourishes on the driest banks and in the most chalky soils.—W. W.]

Soil for Cucumbers.—I have a Cucumber house heated with hot water pipes. What soil suits the growth of Cucumbers best?—SUS. [A loam of medium texture that is neither heavy nor light suits Cucumbers best. It should not be broken up into pieces of less size than that of fowl's eggs, as then the fibre is more lasting. Add to every 9 bushels of loam one bushel of horse manure and half a bushel of charcoal pounded into bits the size of marbles. Thoroughly incorporate the whole together, and when making up the bed press the soil moderately firm.—W. H.]

Crocuses after Flowering.—What is best to be done with Crocuses and other bulbs when done flowering.—A. S. [Plant them out in mixed flower borders. Do not cut off the stems, but let them decay naturally, they may then be expected to flower fairly well in open borders next season. Bulbs are so cheap, and flowering them in pots a second season so unsatisfactory, that it is not worth the trial.—W. W.]

Flowerless Stephanotis.—In the autumn of 1877, I planted a strong plant of *Stephanotis floribunda* in a margin border at one end of a lawn to plant stove, 25 ft. long. It made considerable growth last season, which was carefully trained to three wires on the back wall, near the top. These growths reached the other end of the house by the end of the season, but produced no bloom, with the exception of one solitary small truss. Growth has again commenced, and shoots as thick as a quill are already 3 ft. long, but there is no sign of bloom. Have I got what is called the flowerless variety? A word of advice from some of your Correspondents would be very acceptable.—H. H. [I have had numbers of

Stephanotis from different sources, but I never have met with one of the so-called flowerless varieties, although I have seen a good many fail to bloom through not giving the treatment which they required. A back wall, such as that described, is a bad place for *Stephanotis*, which wants all the light possible and sunshine as well, so far as that can be admitted without scorching. If much or fixed shading has been used on the roof of the house, the plant will be all but certain to fail as regards flowering. Unless the extending shoots, which sometimes run to a considerable length before producing any bloom buds show blossoms in a week or two, I should recommend the plant being cut back to half its present length, and, if possible, the head and the shoots that will be formed during the summer should be trained on wires close under the roof glass over the front path in the house, if such exists. Use as little and as thin moveable shading as is consistent with the non-scorching of the other occupants; the *Stephanotis* likes a drier atmosphere and more air than the generality of stove subjects. Where the conditions above pointed to are absent, it never gets sufficiently ripened to bloom more than sparingly. —T. BAINEs.]

Evergreen Hedge.—A. P. G.—If the soil be suitable, nothing will answer your purpose better than Holly.

Goat Moth.—“W. C. B.” (p. 226) may easily rear the goat moth by confining it in a large flower pot, or some other vessel, placing a little earth at the bottom, and giving it a small log of Oak to eat. The perfect insect comes out about the end of June; it does not remain long in the chrysalis state. It is useless to put it in a wooden box, as it can easily cut its way out. —GEO. WALL, *Lake, Sandown, Isle of Wight.*

Librarian Coffee Seeds (p. 227).—The germination of these depends entirely on the condition of the seed. If fresh and good, they vegetate in about a month or six weeks, if sown in a temperature of from 70° to 85°. The plants should be grown in a similar temperature, and cultivated the same as any ordinary houseplant; there is nothing special in their cultivation. —B.

Pathways for Peach Houses.—“Welshman” (p. 132) will find lattice footpaths the most suitable. We have them here made with four Oak rails 3 in. wide and each 13 in. thick, nailed on cross bars 1 in. apart, they make capital pathways. Stone paths in any fruit house are never good, as the soil cannot be watered underneath them. —CAMBRIAN.

Seeds for Binding Sand.—Will some one be kind enough to advise me as to what kind of seeds will germinate and grow best in pure sand banks along the sea shore? This is a question of much importance in many localities, as sand blowing on to the land becomes a heavy loss. Last year we sowed six bushels of Broom seed on the sands, and harrowed it in like Grain seed, but it failed to grow. —CAMBRIAN. [Seeds, we fear, will not vegetate. Roots of “Sea-bent” are best for covering sandy stretches and arresting drifting sand. —G. B.]

Dead Tops of Pampas Grass.—I have three large plants of Pampas Grass with tops all killed by frost. Would it be safe to burn off the withered Grass as is done on the prairies of America? It would be difficult to cut them down as they are a mass of stems, and have not been cut for years. —O. W. D. [It would undoubtedly injure Pampas Grass plants to burn off their dead leaves. The dead Grass should be cut off with a knife. A good thick layer of well-rotted manure dug in, round, and over the roots of such plants would be very beneficial to them. —G. B.]

Pansies for Exhibition.—Kindly give the names of twelve of the best Pansies for this purpose. —F. P. [The following are a few of the best show kinds:—Captain Cowan, deep golden yellow, belted with bronze purple; Dr. Gibb, cream self; George Murray, pure yellow self; Undine, white, with a very light purple belting; Ohio, deep yellow, with a light purple belting; Gaird, rich dark red, with a very light purple belting; Alpha, pure white self, with a distinct dark blotch; W. Forbes, dark self; John Halliday, rich yellow, belted with maroon; Mrs. Russell, light yellow, belted with broazy purple; Favourite, white ground, violet purple margin; Mrs. Henderson, white, with a light purple margin.]

Roses and Gishurst Compound.—I have some very good free-growing Roses of various sorts, climbing over some rough wooden palings about 8 ft. high. Some of them were quite spoiled last year, and nearly so the year before, by red spider. I wish to try “Gishurst Compound” as a remedy, but fear that if I apply it by syringing freely and strongly enough to kill the red spider, I may so impregnate the soil with the “Compound,” as to kill my Roses and other plants. Will any of your readers tell me whether I need fear this, and if not when I had better syringe my Roses, and what strength to use the “Compound.” —TEGAE. [Gishurst Compound will do very well as a winter dressing for Roses, and no fear of its injuring the roots need be apprehended if it be used according to the directions that will be found on the box containing it. Well syringe every crevice of the palings as well as the Roses. The best preventive of red spider is to manure the ground freely, and keep the Roses well watered; once let the border get dry and the foundation is laid for the attacks of this pest. Every evening in dry weather well syringe the plants with clear water. —W. W. H.]

Peach Trees and Galvanised Wire.—I should be greatly obliged if any of your experienced readers could explain the cause of my Peach trees becoming black and the bark going to decay at the exact part where they touch the galvanised wires? They have been planted two years, in a small house without artificial heat, and are now full of bloom buds, but since the sun begun to shine they show symptoms of suffering in all cases beyond the damaged part. I have also on a portion of the back wall, and trained to the same kind of wire, a Jessamine, which is

alike damaged. Is this usual? and can it be prevented without taking down the wires? If not, what should I do for the best? and should the alteration be made at once, or should the trees be left alone this season? —J. WOOD, *Woodville House, The Spring, Kirkstall.* [Though some cultivators denounce galvanised wire and believe it to be injurious in the manner indicated, you need not get alarmed or think that you must take down the wires. Simply the starker, as far as to allow sufficient space for the expansion of the wood. We have galvanised wire trellises in two of our Peach houses, yet a branch never dies, and full crops of fruit have been obtained regularly for many years. —H. W.]

Insects.—J. G. Henly Hall.—Of your four grubs two are the grubs of the beetle, *Otiorynchus sulcatus*, well known for the injury which they do to the roots of plants; the other two are pupæ of some hymenopterous insect. The four are much alike in size and colour, but are very different as the slightest examination shows. You should destroy as many of the grubs as you can to prevent them getting into the perfect state, and so prevent increase. —W. W. S.

Work on Castor-oil Plant.—R. P.—We know of no such work on the Castor-oil plant. We presume you mean its culture in the Tropics. In this country its culture is very simple, and is described in the “Sub-tropical Garden.”

Names of Plants.—J. R.—Apparently some seedling form of *Rhododendron Dalhousiae*. C. M. O.—*Primula denticulata*, or some slight variety of it; *Viburnum lucidum*, *Pteris longifolia*, and *Andromeda calyculata latifolia*. P. J. N.—Seems a small shoot of the Carob tree (*Ceratonia Siliqua*), but with such a specimen it is difficult to say with certainty. *Widia Lapparia*.—It is a much newer and rarer plant, and the stock in the country much less; therefore, it is more expensive. *South Wales*.—Seems to be part of a leaf of *Lardizabala biterata*. In *South Wales* it should form a fine wall climber.

ROSES.

WINTER AND SPRING FORCED ROSES.

The method of forcing Roses given in detail by M. Lachaux (p. 204) differs materially from that practised in this country, especially by the best growers of these flowers for the London market. In France it appears that small plants are mostly grown one season in pots and then forced, the heat by which they are brought into flower in the case of such as are forced in frames being derived from fermenting materials alone. In France the plants seem to be grown in comparative darkness, but in England we are of opinion that plenty of light is conducive not only to the production of large flowers, but in the case of pinks, reds, and yellows better colour; and flowers produced by plants so treated keep longer fresh than when they have been grown with less light. Nor is this all. The Rose growers in this country find that by subjecting their plants to a maximum of light whilst being brought on into flower they grow on and increase in size and strength from year to year; whereas if forced in darker situations they improve but little, even if no absolute deterioration takes place. The advantages of the plants getting stronger and larger are manifest as the flowers borne by such are, in the aggregate, much larger than those from small plants, a circumstance which makes a material difference in the prices which they realise, as full-sized blooms fetch the double the money small ones do. Anything in the shape of fermenting matter in the houses in which the plants are forced is now excluded by those whose flowers are held in the highest estimation by the buyers, for, as might be supposed, everything of this character tends to the production of a soft, flabby, texture in the blooms, thus rendering them less durable and, consequently, less valuable.

The houses which have in recent years been erected, and which are still being largely added to, are made to admit as much light as any combination of glass and wood can possibly do. The glass in most cases is from 18 in. to 20 in. wide, and the bars which hold it are as thin as they can be, considering the weight they have to bear; they are, however, strengthened by a proportionately light bar, placed beneath them transversely midway between the eave and ridge, and which at short intervals is supported by light iron or wood uprights. Not only is the roof thus made so as to intercept no more light than can be avoided, but the sides and ends are often glass right down to within a few inches of the ground. Such are the Rose houses now being built by the market growers in the neighbourhood of London, and which in many cases have another peculiarity; viz., the extremely small provision made for the admission of air through the autumn, winter, and

spring; in fact, for nine months out of the twelve. To such extremes is this being carried, as to quite upset much that has been written in regard to ventilation in plant-houses of all kinds. But when we see such a course pursued by people who have been years engaged and are most successful in growing this particular flower, in a way that gives the best return for the outlay incurred, and when, in addition, we see the plants go on year after year improving in size and ability to produce larger quantities of the finest flowers, it becomes evident that all has not been learned which is possible on this important subject. It is, in fact, a confirmation of what I have long observed, and also urged, in the cultivation of by far the greater number of the plants that require, or are grown in, heat, viz., that the more light we can give them the less air they need. There is immeasurably more mischief done by the admission of too much external air than there is in the opposite direction, to say nothing of the waste in fuel when the internal air of the structures in which plants are grown is warmed so as to necessitate the ventilators being opened to let it out. The subject, however, is one which needs to be approached with caution. Those who attempt to grow plants in heat, and with a minimum admission of air in dark houses, or such as do not admit the full complement of light, are almost certain to fail. Insufficient light and little air will not do together. Where there is a minimum of the former, there must be a maximum of the latter in the case of plants cultivated in heat.

T. BAINES.

CENTAUREA RAGUSINA FROM SEED.

It will be years before we shall get a bedding plant likely to be capable of superseding this. It is so striking in appearance, so compact in growth, and so useful in various combinations that it is almost without a rival. Its glistening silvery foliage contrasts well with such plants as *Lobelia speciosa*, purple and violet *Petunias*, *Verbenas*, *Gazania splendens*, &c., and it remains good right up to the end of the summer. One good quality about *C. ragusina* is, that no amount of rain disfigures the plant in the least; the leaves retain their colour under all circumstances. Some find it difficult to propagate by means of cuttings. This is obviously the best method of keeping up a stock of a good, compact variety (for seedlings differ in type), and a good plan to secure such a stock is to introduce some old stools of last summer's growth into a good brisk heat in February, at the same time depriving them of a great part of their foliage, and in a few days there will be plenty of young suckers and side-shoots, which, taken off with a small portion of the stem attached, inserted in a 2½-in. pot, and plunged in a brisk bottom-heat, will, in a few days, be rooted sufficiently to be potted off, which operation needs to be performed tenderly, as the roots are very brittle, and soon break. When the cuttings are repotted, they should be returned to warm quarters to establish themselves a little; they can then be gradually hardened off.

A short time since I sowed 500 fine plump seeds, sowing them in pans in a good, light, sandy soil, and placing them on a gentle bottom heat. Over 400 of them grew quickly, and the others are gradually showing through the soil. As soon as large enough to handle they will be pricked off into shallow boxes. The next shift will be into small sixty pots, and, if there is time and house space, they will yet have another shift. This is a rapid way of getting up a stock, and I find as a general rule that seedling plants are pretty uniform in character. At any rate, the seedling plants that show a tendency to grow tall should be planted out with tall-growing plants, or go in the centre of large beds, keeping the dwarfier-growing types for dwarfier associates. I have tried *Centaurea ragusina compacta* for bedding purposes, and confess to be disappointed. It is too dwarf for many combinations, and to my mind it lacks the chastened silvery hue that belongs to the older type. Such is my experience. Others may be more fortunate with it, but I can only state what has happened in my own case. To many the foregoing information may appear the reverse of new. Let it be remembered that the ranks of gardeners, and of amateur gardeners in particular, are constantly being renewed, and that there is, in consequence, no lack of learners. D.

Tritomas and the Frost.—We grow *Tritoma Uvaria* and other varieties extensively, as when in bloom they look well backed up by evergreens. After the frost first broke up, in clearing away decayed leaves and frost-bitten subjects, some of the *Tritomas* were partially divested of their weather-beaten leaves, and I find that these have suffered severely from succeeding frosts, while those left with their

old leaves intact are already pushing up vigorously. To Ferns and many other plants, the decaying leaves also form a natural and efficient winter protection.—J. G. L.

PROPAGATING.

GRAFTING DAPHNE INDICA RUBRA.—This is best increased in this way. Get the stocks into the propagating house early in March—say a fortnight before they are required to be grafted, in order that the sap may be in motion. With a sharp knife cut the scion, as shown in fig. 1, then the stock, as seen in fig. 2; bind tightly together with thread or matting, and put a small piece of grafting wax on the top (cut-off part) of the stock; set them on a cool bottom in the grafting box in



Fig. 1.—Scion of *Daphne indica rubra*.

the propagating house, and keep them close for a few days then give a little air every morning for a couple of hours. Under proper treatment they generally unite in about six weeks, when they may be gradually inured to more air, and removed to the greenhouse.—H. H.



Fig. 2.—Stock for *Daphne*.

Useful Paths for Forcing Houses.—There are so many fancy articles now-a-days in the way of tiles and other ornamental flooring, that some of the more serviceable but less showy materials get overlooked. For forcing houses or pits where a good deal of work has necessarily to be done, and where a smooth, hard surface that can readily be cleaned is a desideratum more than ornamental effect, I find nothing better than good cement laid on a good thickness of concrete or broken bricks. If applied about 1 in. thick and allowed to get thoroughly set and hard before it is trodden on, any kind of wheeling or even carting may safely be carried on on it, and it is very durable. A grating just outside the door, with a cesspool to catch any sand or soil that may be washed out of the houses, so that the water may run away without choking the drains, will be found a useful addition to any kind of glass structure.—J. G. L.

Hardiness of *Selaginella Kraussiana* and *S. Brownii*.—These have proved hardy with me this winter planted in an unheated house. They are now quite healthy and growing.—J. L.

Fine *Dendrobium Wardianum*.—Mr. Charles Hart, of Lea, sends us flowers of a remarkably fine variety of *Dendrobium Wardianum*, measuring 5 in. in diameter, and very finely coloured. It is pronounced to be the finest variety yet seen of this plant.

No. 384.]

SATURDAY, MARCH 29, 1879.

Vol. XV.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—Shakespeare.

EARLY FLOWERING SAXIFRAGES.

IN spite of cutting easterly winds, and the bleak wintry storms that still prevail, the group of Alpine Saxifrages, of which *S. oppositifolia* may be regarded as the type, display their charms here in a manner that seems almost out of harmony with the rest of Nature. The original typical form of *S. oppositifolia*, so common (and, perhaps, exclusively known) forty years ago, is now very scarce with us. Its rosy purple flowers are nearly circular, and form a mass of bloom so dense that the blossoms often overlap each other, and entirely conceal the foliage. The variety known as *S. oppositifolia* var. *splendens*, has flowers of much greater brilliancy, though slightly smaller. In bud, especially, the colour is almost carmine, and exquisitely beautiful. In density of bloom it approaches the typical form, but rarely quite equals it. This variety we obtained many years ago on the mountains of Scotland. *S. oppositifolia* major has flowers twice the size of the type, with less of the purple tinge. It is of a clear Rose colour, inclining to Cherry. The petals are broad and well rounded, but when fully expanded they are less compact than those of the type. The origin of this showy variety is unknown to me. *S. oppositifolia* pyrenaica differs conspicuously in habit. Its shoots are ascending (*i. e.*, erect at the tips), and are twice as robust as those of any of the preceding. The flowers also are larger, but usually more sparse. Perhaps its finest form is *S. oppositifolia* pyrenaica maxima, which has enormous blossoms (as large as shillings), of a lovely light rose colour. The inflorescence of this is often very dense. *S. oppositifolia* alba has, as the name implies, white flowers, which form a pleasing contrast to the other varieties; but, unfortunately, though the colour is good, the form of the alba which we grow at York is anything but good. It is narrow-petalled, and not compact in bloom. Should any one possess a snow-white, well formed, compact flowering alba, I should be glad to have some information respecting it.

S. Rudolphiana (Koch) has a more spreading habit of growth, and the rosy purple flowers are borne sometimes singly, sometimes (though rarely) in pairs. Its alliance is with *S. biflora*, the habit of which is loose, with clustered ascending tips. The flowers are in clusters of from two to four, varying in tints from bright rose to deep blood colour; petals narrow, and wide apart. *S. Kochi* is similar in habit to the last, but it has rosy purple flowers, also borne in twos and fours together at the extremities of the shoots; it is good in form, the petals being broad and close. *S. retusa* has foliage very short, firm, dense, and compact. Its flowers are small, and in clusters at the extremity of erect stalks; the petals are narrow, pale rose, sometimes brighter. It blooms rather later than the varieties of *S. oppositifolia*. *S. Wulfeniana* is closely allied to the preceding, of which it is probably the Tyrolean form. *S. Burseriana*, with its charming white circular erect blossoms, and brownish-red—sometimes almost scarlet—calyxes, contrasts grandly with any or all of the foregoing, and blooms at the same time, or even earlier; *i. e.*, as soon as the winter's covering of snow or ice melts off. This species forms dense circular cushions of compact erect branchlets, and is an invaluable early spring flower.

S. oppositifolia and its varieties flourish in open, rich, loamy soil, either in the common garden border or in fissures of rockwork; but, in either case, the soil should be trenched or prepared fully 2 ft. deep, so that the roots may reach a level below that which is affected by summer drought. They are perhaps the finest when placed in a fissure or on a ledge of rockwork, where the roots can ramble backward or down to any depth, the soil being rich, light loam, mixed with fragments of limestone or grit (small fragments of any rock will do), and a little river sand. They should always be placed so as to get sunshine; they grow but will not flower freely in the

shade. The same treatment, with a little admixture of peat or vegetable mould, suits *S. retusa* and *S. Wulfeniana*. The Tyrolean species (*biflora*, *Rudolphiana*, and *Kochi*) are less easy to please. They grow wild on the moraines of glaciers, where light vegetable soil, sand, and *debris* of every kind blend with massive rocks, now coating the surface, now filling the interstices; water dripping or oozing around, and frequently flowing in volume within 2 ft. or 3 ft., so as to soak the bases of the rocks on which their rosy carpet is spread. They will condescend to grow in pots, nevertheless, but rarely with the freedom which characterises the varieties of *S. oppositifolia*.

York.

J. BACKHOUSE.

PRIMROSES AS WINDOW PLANTS.

THE Primrose, both single and double, is deservedly a favourite garden flower, but its value as a pot plant for window decoration is not perhaps so well known as it should be. There is not the slightest reason why our dwellings should not be made gay with this charming spring flower at an earlier period of the year than it comes naturally into bloom in the open air. Primroses are impatient of forcing, but they flower beautifully in the window of a cool room, and expand their pretty bright blossoms as well, and oftentimes better, than when in the open ground. Nor are they particular as to aspect; according to my experience they thrive quite as well in a north window as in one more fully exposed to the sun. It is this latter quality which renders Primroses especially valuable, as we really find but few plants which, during February and March, will grow and flower freely in a north aspect. Many apartments, which at this season of the year present a rather dreary appearance, might be effectively and inexpensively enlivened by filling their windows with Primroses, and the most satisfactory part of the matter is that Primroses not only live there, but the owner has the pleasure of seeing them grow, expand, and develop fresh beauty every day. It lays in the power of every one to render their homes bright and pleasant in early spring by means of these ever welcome flowers. By planting them out during summer in good soil in a sheltered situation and keeping them well watered they may be lifted with good crowns and roots, placed in 4-in. and 6-in. pots, and stored away in a frame or in some sheltered spot where they can be protected during severe weather, from thence to be introduced—about the middle of January—into the situations which they are intended to beautify.

J. CORNHILL.

Byfleet.

Muscari lingulatum.—The rare, pretty, and very distinct little *Muscari lingulatum* has been in bloom with me for the last two weeks. It is the dwarfiest of the genus as far as I am acquainted, and the most distinct. The flower spike, which is a pale sky blue, rises from two short, strap-shaped leaves, which remind one more of a Tulip or *Bellevallia* than *Muscari*. The bulbs were sent to me by Mrs. Darford who collected them in the Cilician Taurus at the same time that she discovered *Crocus parviflorus*. With the *Muscari* Mrs. Darford sent me three or four bulbs of a *Scilla* allied to, but distinct from, *S. sibirica*. It flowers about a week earlier than the latter species, has blossoms of a much paler colour, and is much smaller in all its parts. It reminds me of *Scilla sibirica* minor which appeared in THE GARDEN a short time since. It may be the Russian *S. amoenula*, but I know nothing personally of these two varieties. Mrs. Darford's *Scilla* is earlier than *S. bifolia nivalis*; in fact, it is the first of the family to bloom.—H. HARPUR CREWE.

Lesson from Nature.—I have often been struck with the beautiful effects which Nature with simple materials produces in landscape scenery. Here is an example which I saw last summer. A river meandered through verdant meadows, the banks of which were studded with Willows, Alders, Ash, and Brambles. These were sometimes in the form of single specimens or small clumps, and at other times expanded into dense masses of foliage, either formed of a single species or composed of various kinds. The foreground was carpeted with Forget-me-nots, and these again were backed up by masses of the purple Loosestrife and the large Willow Herb which sprang out of the dense foliage of a species of Sedge. Higher up tufts of the bright yellow Tansy lighted up the whole mass, whilst noble specimens of the Waterdock flanked it, and the lovely flowering Rush issued here and there from the water itself. A few Willows and Alders in the background completed the picture. Effects such

as these are easily obtained, though not necessarily by means of the plants just named. There is, happily, a wide field for choice in this respect; there are many noble plants that are well adapted for, and which might be utilised for this purpose.—JOHN CORNHILL, *Byfleet*.

NORTH AMERICAN HARDY PLANTS.

We have received from Messrs. Woolson & Co., of Passaic, New Jersey, U.S.A., catalogues of North American plants, bulbs, &c., very interesting on account of what they enumerate, and very correct as regards nomenclature, &c. The list devoted specially to North American roots, bulbs, &c., is one in which will be found many beautiful plants of North America offered for sale for the first time. In this American catalogue occurs not a few plants very common in Europe, even in a wild state, but also many which have not as yet been introduced to cultivation here. There is a separate list of North American Ferns, not without value to those who wish to enrich their collection of hardy species, and also a list of North American Orchids. We have reason to believe that the nomenclature of the plants offered by this firm is correct. The following are a few of the plants enumerated:—

AMIANTHIUM MUSCETOXICUM (Gray).—A smooth, bulbous plant 1 to 2 ft. high, with broadly, linear leaves, and a simple, dense raceme of handsome white flowers, which turn green with age. Flowers and foliage both showy. Does best in a rather moist, sandy soil. New Jersey and southward.

ANDROSEPHIUM BREVIROSTRIS (Watson).—Utah. Flowers violet, borne in umbels of four to seven, in early spring. A stouter plant than the next, and with smaller flowers. New and rare, and as yet but little cultivated.

ANDROSEPHIUM VIOACEUM (Torr.).—A rare and showy species from Texas, 6 to 8 in. high, with a small, coated bulb, which surmounts a depressed globose bulb or corm. Flowers violet, borne in umbels, slightly fragrant.

ARISEMA TRIPELUM (Torr.).—An aroid, 12 to 18 in. high from a turnip-shaped corm. Spathe green, or often variegated with dark purple and whitish stripes or spots, and much hooded at the summit. Commonly known as "Jack-in-the-Palmit." An interesting and showy plant for moist places.

BRODIAEAE GRACILIS (Watson).—New species; California; 2 to 4 in. high; dwarf, with small yellow flowers, with brown mid veins.

BRODIAEAE MULTIFLORA (Benth.).—Oregon; 1 to 2 ft. high; flowers blue; leaves 1 to 1½ ft.; fleshy; bulb 1 in. or more in diameter resembles *B. congesta*, but distinct.

CALOCHORTUS AUREUS (Watson).—Southern Utah; a dwarf species 4 to 6 in. high, with flowers 2 to 3 in. in diameter, of a deep, rich yellow; petals bearded and furnished with purple spots at the base; recently described and still rare.

CALOCHORTUS FLEXUOSUS (Watson).—Utah; branching, with greenish orange-spotted sepals and purplish petals, deep purple at the base, and a circle of orange or purple above; flowers 2 to 2½ in. across; new and rare, and but little known in cultivation.

CALOCHORTUS GREENI (Watson).—New species; Northern California, Oregon, &c.; 1 ft. or more high; flowers large lilac, barred with yellow and purple; new to cultivation.

CALOCHORTUS GUNNISONI (Watson).—Rocky Mountains, &c.; one of the finest and, at least with us, most hardy species. Stem 6 to 20 in. high, bearing one to four flowers, the petals of which are white above, yellowish-green below the middle, dark purple at the base, and strongly bearded.

CLATONIA TRIPHYLIA (Watson).—Oregon, California, &c.; stems from deep-seated tubers; flowers in compound racemes, white or pale rose colour; not before offered.

COOPERIA DRUMMONDI (Herb.).—Texas; a bulb belonging to the *Amaryllis* family, with slender, linear leaves and a naked stem, which bears at the top a single, fragrant, white flower 1 in. or more across, with a slender tube 5 to 6 in. long; an excellent plant for forcing; this is hardy in our grounds.

COOPERIA PEDUNCULATA (Herb.).—Texas; flowers white, opening at night, and very fragrant; differs from the above in having a green tube and longer and broader leaves.

CRINUM AMERICANUM (American Crinum).—Florida; 1 to 2 ft.; a rare and showy bulb which may be planted in the open ground during summer; flowers large; 6 to 8 in. long, very fragrant; similar in habit to *pancratium*, but without the crown on the tube of the flower.

DELPHINIUM SIMPLEX (Dougl.).—Oregon and northward; 12 to 30 in., bearing dense racemes of flowers, which vary from blue to almost white or yellow. This species of *Delphinium* is tuberous.

*ooted, and drops its leaves soon after flowering; the tubers, after overwintering, may be kept in dry sand, like *Dahlia* roots.

DICENTRA UNIFLORA (Kellogg).—Sierras of California, southward stems 3 to 5 in. high, from a fasciculate fleshy root, surmounted by a bulb-like cluster of grain; flower-scape one-flowered; petals flesh-coloured; we believe this is new to cultivation.

ERYTHRONIUM ALBIDUM (Nutt.).—White Dog's Tooth Violet.—Iowa and other Western States; flowers purplish white, and leaves not generally spotted; a fine showy species.

ERYTHRONIUM PURPUREUM (Watson).—A new and recently described species from California; flower stems long, stout, and bearing four to eight flowers, which are light yellow, more or less tinged with purple, and deep orange at the base; very distinct from the last.

EUSTYLIS PURPUREA (Engelm. & Gray).—A beautiful plant belonging to the *Iris* family; flowers of a deep purple, borne on stems 1 ft. high; ripe for forcing.

FRITILLARIA ATROPURPUREA (Nutt.).—Sierra Nevada and northward; stem 4 to 24 in. high, and bearing one to nine flowers, which are dark brown, variegated with greenish white or yellow; both leaves and stems are generally tinged with brown or purple.

FRITILLARIA PUDICA (Spreng.).—Oregon, Utah, &c.; a pretty dwarf species 3 to 8 in. high, and bearing one to six deep yellow, bell-shaped flowers in early spring; one of the easiest to grow.

FRITILLARIA RECURVA (Benth.).—California; 1 ft. or more high, with flowers 1 in. long, blotched scarlet and yellow; very fine and showy.

HABRANTHUS ANDERSONI (Herb.) var. *TEXANUS*.—Texas; a beautiful dwarf *Amaryllid* with narrow leaves from small obovate bulbs; stem one-flowered; flowers 1 to 2 in. long, yellow or copper coloured, striped externally with reddish veins; fine, and not offered before, we believe.

HESPERALOE YUCCAIFOLIA (Engelm.).—Texas; this, which has been styled the "Red-flowered Yucca," grows 4 to 5 ft. high, with numerous red, cylindrical, bell-shaped flowers, which look more like those of *Aloe* than *Yucca*; a very rare plant which has seldom been under cultivation.

HESPEROCHIRON PUMILUS (Porter).—Oregon, &c.; a dwarf, stemless plant 2 to 4 in. high, bearing in early spring single purple or purplish white flowers, which are densely bearded within; this is *Villarsia pumila* (Dougl.).

LEWISIA BRACHYCARPA (Edgelm.).—Utah, Sierras, &c.; a species new to cultivation so far as we are aware; the leaves are fleshy, spatulate or linear in rosettes; flowers white, 1 in. or more in diameter, with seven to nine petals, and very showy.

MERTENSIA OBLONGIFOLIA (Don).—Oregon, &c.; 6 to 8 in.; this is one of the most showy and desirable Alpines for early spring flowering that we have cultivated; the flowers are deep blue in close clusters; it has proved perfectly hardy with us for several years, having stood our cold winters without protection.

PANCRATIUM ROTATUM (Ker.).—Florida to North Carolina; 1 to 2 ft.; flowers large, white, fragrant, with beautiful fringed corolla.

SERENANTHUM OCCIDENTALE (Gray).—Oregon; a rare Liliaceous plant, which we believe we are the first to offer; stem 6 to 24 in. high, bearing greenish-purple flowers, which have recurved, yellowish tips, and are borne in a raceme or simple panicle; individual flowers ½ in. or more long; this has somewhat the habit of *Camassia esculenta*; grows naturally upon the mossy banks of mountain streams, and, our collector writes us, is scarce.

THILLIUM PETIOLATUM (Pursh).—Oregon, &c.; the most remarkable of all the N.A. species; leaves large, cordate, with long petioles; flowers large, sessile, purple.

In a Somersetshire Garden.—The annexed engraving shows a portion of a rock garden at Orchardleigh Park, on which the hardy Palm is quite at home, grouped with *Yuccas* and hardy Ferns. Near the same spot, but not shown in our sketch, the New Zealand *Arundo* and the Pampas Grass attain unusual dimensions. These and such as are shown in the engraving are bold and varied types of exotic plants hardy in most districts, but particularly free and vigorous in this western county.

Balanium Culcita.—This, one of the most useful of Ferns, has the large spreading fronds of a *Dicksonia*, without its stem. We have some large clumps of it growing on elevated rocks in our Fernery, and, in addition to its being one of the noblest looking of Ferns, it is eminently suited for cutting, the fronds being subdivided so that the sprays are available for many kinds of decoration, and of a most beautiful deep glossy green, a colour which they retain for a very long period. Any one having a cool Fernery, and desirous of having a rival to the well-known *Woodwardia radicans*, should try this noble Fern, which I feel sure will give satisfaction.—J. G., *Linton*.

PLANTING THE SIDES OF CARRIAGE DRIVES.

In addition to the Rhododendrons which "Beta" (p. 132) proposes planting along the sides of his carriage drive, groups of gold and silver Hollies would have a capital effect, but, in order to show these off to the best advantage, clumps of the common kind or some other dark evergreen should be planted between them. It is best, however, to use the same species, as then they associate well together, and a good way of arranging them is to plant alternately at wide intervals, when part of the space between may be filled with irregular beds of Rhododendrons, groups of *Arundo Donax* and conspicuous Bamboos, Pampas Grass, and such like, which will render the drive both ornamental and interesting at all seasons. Similar effects may be produced by using the common and variegated Yews, but, being so much slower growing than the Hollies, it would take many years to get them of large size. One of the brightest and best of the golden Hollies is Lord Harrington, which, in good rich soil, grows at a great rate, and soon forms a very handsome specimen. Before planting the best way is to break up the ground to a good depth by trenching it thoroughly over, and, when doing this, to work in plenty of rotten manure, together with the trimmings from the sides of roads and the scrapings of the same, a mixture that Hollies greatly delight in. These shrubs can only be transplanted with safety about the first week in April, or just as they are bursting their buds, a time when there is a reciprocal action below, thus enabling them to start off into growth at once before the bark becomes shrivelled and contracted, from which they seldom recover. A heavy mulching with a thorough soaking of water at the time of planting will help to prevent this, and be of great service in enabling them to become quickly established. Irregular-shaped clumps will be found to produce the best effect, as being less formal, the outline viewed from any particular spot is sure to be more pleasing and satisfactory. As the soil is of a sandy loam, it will suit all the plants enumerated above, Rhododendrons included, unless it happens to contain calcareous matter, which if it does, these shrubs will refuse to touch it, as they have a strong dislike to anything of that kind. Sharp grit they are very fond of, and, like the Hollies, greatly appreciate any trimmings from the road-side, which if mixed with refuse peat, or thoroughly decomposed leaf soil, answer famously for giving them a start. Assisted in this way, I have known of several instances where they succeed and flower better than when they get all peat, which is accounted for by the more rapid manner in which the latter decays, and the shallower level the roots ramify in when they have little else but vegetable matter to feed on. Although Rhododendrons object to much manure in the soil, it is of great benefit during hot, dry summers if laid on the surface, as then the juices are washed out and carried down, and the dense shade it affords keeps

the ground cool and intercepts evaporation, at a time when moisture is of the greatest importance in assisting them to form their young growth and stud it with flower buds. The margins of the Rhododendron clumps or the vacant spaces between the plants will come in admirably for planting different kinds of Lilies, the soil and situation there being specially adapted for their successful culture, as, to grow them well, it is essential that the bulbs should be in soil on which the sun does not shine hotly, although the tops will bear almost any amount. This they will get in abundance as they peep up amongst the

shrubs, the foliage of which is a great help in showing off the gorgeous beauties of the flowers to the greatest advantage. Most of the Lilies are supposed to do best in peat, but the finest *L. auratum* which I ever saw was growing in a mixture of leaf-mould and roadside trimmings in about equal proportions, the latter of which contained a good deal of sharp washed sand, that appeared to suit the bulbs remarkably well, as they increased in size at a great rate, and each year grew finer and stronger. The hardiest of the Bamboos is *Bambusa Metake*, the habit and general character of which render it just the thing for associating with the *Arundo* or the Pampas Grass, magnificent groups of which may be formed separately or mixed in large masses, the effect either way of the whole, seen in such striking contrast with the more round-headed shrubs, being such as to break up the uniformity and give a more natural appearance. The point in planting is to leave plenty of breadth of Grass between the several masses, as nothing adds so much in heightening and giving finish to the whole as a large expanse of turf, the tendency unfortunately of late years being to curtail this, and thus English gardens and grounds are robbed of much of their beauty. Very ornamental clumps may be made in the paddocks adjoining by planting the White Poplar, or Abele, and Copper-leaved Beech, the silvery leaf of one and the dark rich colour of the other being very telling from early spring to autumn, and, as they are both tolerably fast growing, there would not be long to wait before getting them to a fair size. Among the Pinuses, none, in my opinion, forms more picturesque groups than the Scotch Fir, the polished bark of which and the quaint heads the trees form as they attain age giving them quite a tropical appearance. Among deciduous trees *Liriodendron tulipifera* is one of the most ornamental, as is also the Plane; both have very large, finely-cut leaves that colour up well in the autumn.

S. D.



In a Somersetshire Garden.

Glossy-leaved *Laurustinus*.—This acquires here a very large size and generally blossoms profusely, though somewhat later than the common kind. This year, however, though both are covered with

flower buds, I fear the frost has injured the buds too much to allow of the n flowering well.—C. M. OWEN, *Gorey, Ireland.*

THE KITCHEN GARDEN.

VEGETABLES *v.* FRUIT.

IN the discussions which take place from time to time on the subject of growing fruit in this country with advantage to the consumer and profit to the cultivator, it seems to me that the question of providing a good and cheap vegetable diet is very much overlooked. When people can buy oranges for months in the year at two a penny, eatable foreign Grapes of much better appearance than those often sold in Covent Garden at high prices, for 4d. and 6d. per lb., Apples, Pears, Plums, &c., at prices which just leave the lowest margin of profit to the grower and retailer, or makes it worth his while to carry them to the market, I do not think they can complain so greatly, but in the matter of salads and green vegetables how do the masses of the people in the great centres of industry stand? Why, they have simply to do without them; firstly, because after supplying themselves with the other necessities of life they have little to spare on vegetables, and secondly and principally, because vegetables are too expensive and uneatable. The general arrangements in most of our large towns where vegetables are most needed, for the distribution of marketable garden produce, are, as a rule, simply execrable. The general public cannot conveniently procure what they want except through the middlemen or greengrocers, and it does not appear that the latter can sell remuneratively under a figure fifty or a hundred per cent. above what they pay for their goods in the market. This, to my knowledge, is exactly the state of things in some of the largest towns in England. Why, in some of these towns, you might count the respectable greengrocers' shops on the fingers of one hand, and these cater for the wealthy principally. Go into the market on any day and see if you can buy even a head of Curled Greens with more than a mouthful of wholesome or cookable leaves on it for less than 1d. or 2d. each; three small sticks of Rhubarb for less, when it is plentiful; a stick of Celery under 3d.; a Cucumber under 6d. or 9d. in season, or any other common produce at a reasonable price, and then say whether it be fruit or vegetables that are most out of the reach of people who can do without fruit to some extent, but who would consume vegetables in quantity if they could only procure them. From these and other causes it is a fact that a vast portion of the inhabitants of all our great towns and plenty of our small ones are absolutely without wholesome green food of any kind from one year's end to the other.

But the question is, Could vegetables be grown to come within the reach of the masses, and, at the same time, to pay the growers? No doubt they could, provided greater facilities were afforded in the way of markets, where people could go at convenient hours, and without travelling a mile or two, to buy what they wanted. It is not to be expected, of course, that it would pay farmers generally to turn their farms into market gardens, but it would pay some of them near large towns to do so, and simply devote their land to the culture of common vegetables. Fruit crops are not to be depended upon with any degree of regularity, but there are few or no parts of the country where good crops of common vegetables could not be secured any season with certainty, and there is as little doubt that they could be equally readily disposed of at remunerative prices.

Before, however, the question of growing and disposing of either fruit or vegetables on an extensive scale and for the benefit of the people can be settled, the question of market accommodation must be considered. In some large towns there are what are called fruit markets, but they are monopolised for other purposes. In Sheffield, for example, the dead meat and poultry market is a good one of its kind, and is devoted to the purpose for which it was built; but what is called the fruit market, a large, commodious, and well-lighted structure, every way adapted to the display of garden produce on small stalls, like the Halles Centrales in Paris, is almost exclusively devoted to the sale of everything except vegetables and

fruit, for which I have always understood it was originally intended.

Would the working classes add vegetables to their dietary if they could procure them good and cheap, is a question sometimes asked, and one which may be answered affirmatively at once. As things are at present they can only procure vegetables as a luxury, occasionally, perhaps, on a pay night, and travellers in local trains on Saturdays will often see the wives of working men returning from market with a few green vegetables in a basket along with their groceries and other goods, and which represent the week's supply. During prosperous years we have been told by the dealers that the poorer classes are amongst their best customers. The mere fact that the refuse of the greengrocers' stalls is often sold to hucksters, who sell it among the poorer and lower orders of the towns, is sufficient evidence of the desire to obtain green food when it can be had at a reasonable price. J. S.

REGENT AND DALMAHOY POTATOES.

"J. S. W.'s" communication (p. 247) in reference to these Potatoes confirms what I wrote on the subject, that under the name of Regent several sorts are grown, some earlier, others later; but the original Regent I maintain, despite what may be described in catalogues or elsewhere, is not either late in coming to maturity or can be correctly classed as a late Potato in any way. If the seed be fairly prepared and planted at the proper time, the tops, in most parts of the country, will be dead or dying by the end of August; it shows its intermediate season habit by sprouting earlier in the spring than the late-growing, late-keeping sorts, and also by its deterioration in eatable qualities sooner than the late ones. I write from memory, but I believe it is over twenty years since I became acquainted with the Dalmahoy, which then made its first appearance in the Potato-growing districts of Cheshire, where I was living at the time, and where it was soon generally known and largely grown, both as a field and garden crop. It was a rougher and deeper-eyed Potato than the Regent, as well as later in every way. The sort now sold by many as Dalmahoy is very different from the kind first known under that name, and I have often heard others make the same remark in reference to the forms exhibited of this as well as of the Regent and many others, and this notwithstanding the difference that soil and cultivation have upon them. We often hear late Regents and early ones spoken of, and immense quantities of a late deep-eyed but very good Potato are cultivated in Lincolnshire and other Potato-growing districts, but all cultivated in Lincolnshire will never make such into the true Regent. In the case of any vegetable of which there are such numbers of varieties in cultivation as there now are of Potatoes, with their liability to get wrongly named, there is sure to be much confusion. The sort now known as Forty-fold is a totally different kind from the original, and I could point to numbers of similar instances. T. BAINES.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

The Chiswick Trials of Vegetables.—I have no doubt that "A. D." is as familiar as most people with the different varieties of the Potato, judging from what he has written on the subject from time to time, and if he be determined to pin his faith on the Chiswick trials in all cases, no one need interfere, but there are numbers who do not, and the decision of the Chiswick authorities that a well known early Potato and an equally well known late one are identical, gives some colour to the belief that they are not infallible. Both them and "A. D." have simply been deceived beyond all manner of doubt. The Potato in question was sent out by its raiser as an early kind, and was subsequently proved to be an early one by those who grew it for twenty years afterwards or longer. How it turned out to be a York Regent at Chiswick, is for the Chiswick authorities to explain.—J. S. W.

Scarcity of Vegetables.—I had 120 plants of Snow's Winter White Broccoli planted on a sheltered spot on a south border, and out of that number all were killed except ten. The frost has also killed Cabbage stamps and Scotch Kale. Brussels Sprouts have stood best with us, and the more leaves they have on them the better they stand the frost, as the leaves protect the Sprouts. In autumn we had a quantity of Lettuces and Endive. The first sown early in July we took up and put in pits and cold Peach houses, thinning them as they were wanted. Of Endive we had a good plantation in the open border, which we protected with dry Fern. From this we lifted plants as we wanted them and put them in the Mushroom house to

blanch; this carried us on some time, and by having a good stock of Chicory, Mustard and Cress, and Celery, I shall be able to keep up a daily supply till the end of March, when I shall have to depend on Lettuces and Chicory, Mustard and Cress, and Celery till Radishes come in. Onions in a green state are by some much prized. Of those sown to stand through the winter in the open air not one in fifty is left, but I have plenty in pits sown in January, and by picking them off into boxes I shall have enough. I only grow two sorts of Lettuces, and one kind of Endive for winter use. A winter like the past proves the advantage of having plenty of pits and frames in which to keep winter vegetables.—J. C. L.

Dwarf Peas for Small Gardens.—Inquiries as to what are the best sorts of Peas for small gardens, kinds that want no sticks, are so often addressed to me that I have no doubt there are others beside my correspondents to whom the information would be welcome. Maclean's Advancer is the best early dwarf Marrow, but, as an earlier dwarf semi-Marrow, First Crop may be sown to precede it. For a middle crop use Maclean's Wonderful, and for the latest Laxton's Omega. These are the dwarfest of their class. Another good selection, rather taller, but still classed as Dwarf Peas, are Prince's Royal, Premier, and Veitch's Perfection. All of these produce Peas of the very best quality.—A. D.

THE LIBRARY.

VAN HOUTTE'S FLORE DES SERRES ET JARDINS DE L'EUROPE.

THE fourth and concluding triple part of the twenty-second volume of this profusely and most beautifully illustrated, but, alas, most irregularly-published work has just reached us, and if, perhaps, hardly in any material degree superior it is, at least, fairly equal in interest and beauty to recent issues of the work, which, for the future, it is to be hoped will appear with greater regularity. This triple number contains, as usual, twenty-seven coloured plates or their equivalents, comprising portraits of the following plants:—A double plate representing the pitchers of three fine varieties of *Nepenthes*, named respectively *N. alba-marginata*, *N. Rafflesiana*, and *N. sanguinea*. A double plate representing six varieties of the fine double *Cinerarias* raised and sent out by Messrs. Haage & Schmidt, the well-known Erfurt house, which, from their perfect duplicature, more resemble miniature Dahlias or forms of the double *Grondelet* than *Cinerarias*; indeed, they were absolutely mistaken for double *Grondelet* when first sent to this country as cut blooms only to a leading London florist; but, unfortunately, they generally deteriorate when propagated by cuttings, which much detracts from their value, as they have constantly to be reproduced from seed, of which only a small proportion, of course, comes double. A double plate of *Amarantus atro-purpureus*, a fine, deep blood-red, tasselled form, said to be a native of Calcutta and to be well adapted for summer bedding if sown in the open air in May. A double plate of *Azalea indica* *Sourvenir de Louis Van Houtte*, a most beautiful, semi-double, self variety of clear bright rose colour, with individual flowers of immense size and fine substance. A double plate of *Camellia Roi des Belges*, a fine rose-coloured variety, the blooms of which are sometimes flaked with white. A double plate of *Garcinia Mangostana*, the tropical fruit known as Mangosteen, a native of the Molucca Isles, and showing blossom as well as interior and exterior of the fruit. A double plate of Hybrid Rhododendron Comte Charles de Kerchove, raised at Ghent, with large, whitish blossoms, distinctly edged with pale pink and with distinct chocolate coloured markings on the upper petals. A double plate of the beautiful fine foliaged plant, named *Maranta Massangana*, a native of Brazil. A double plate of the Grape Ingram's Prolific Muscat, which we consider altogether out of place in a work of this nature. And also single plates of:—Seven varieties of *Cyclamen* (named respectively—1, *Atkinsii*; 2, *persicum amarantium*; 3, *album punctatum*; 4, *persicum roseum*; 5, *Comm*; 6, *Aleppicum candidissimum*; and 7, *persicum album*), all of them very pretty little flowers; *Masseallia Poristeria*, a terrestrial Orchid, more curious than ornamental, with brown and greenish flowers; *Fremontia californica*, reproduced from the "Botanical Magazine"; *Cryptopodium punctatum*, likewise a reprint from the same work; *Allium oreophilum*, a pretty little rose-coloured Garlic, a native of the Caucasus, already figured in Regel's "Gartenflora"; *Blumenbachia Chiquitensis*, a reprint from the "Botanical Magazine"; *Pityrospasma acerinum*, a pretty, white-bloomed, hardy herbaceous plant from Japan—also known under the name of *Actaea japonica*, and with rather handsome foliage; the infundescence of the almost hardy Chinese Palm (*Chamserops Fortunei*), now frequently met with in our gardens; the fine specimen of *Araucaria imbricata* taken from

the frontispiece of Mr. A. Mongredien's work on "Trees and Shrubs in English Plantations," and which is a rather fanciful portrait of the Dropmore tree as it appeared some three or four years ago; this plate we consider but a makeshift, and altogether unworthy of insertion in such a work as that now under notice. W. E. G.

EFFECTS OF THE WINTER IN SOUTH DEVON.

THE various Citrus trees, for which this place has been famous for more than two centuries, though slightly damaged, are safe, with the exception of a fine Bergamot Lemon, which is in a doubtful condition, the same may be said of a Sweet Lime. These trees are on the south and east walls, only protected by frames of wood or reed. *Dracenas* in a dry situation are unhurt, while smaller plants in a damper site are quite dead. Hardy *Palms* are wholly uninjured, as are also *Camellias*, which are laden with flower buds. Hybrid *Rhododendrons* are quite safe, especially some very fine white varieties from the Sikkim Aucklandi. One fine specimen of the true *R. arboreum*, several feet high, is unhurt, as is likewise the Ceylon *R. nobile*. A few of the Sikkim *Rhododendrons* have their foliage damaged. Large plants of *Myrtus apiculata* against a wall will lose a good deal of their foliage. The *Loquat* is uninjured, as are also *Berberis Fortunei*, *nepalensis*, and *Hookeri*, three species of *Escallonia*, and an American *Aloe*. A huge mass of New Zealand Flax, hitherto uninjured, is much damaged. A vast number of young and rare shrubs, planted in a new piece of the American garden, are killed, as might be expected after such an arctic winter. Shrubby *Veronicas* are much injured, if not quite dead, with the exception of *V. Traversi* and *V. pinguifolia*. *Clematis indivisa* is much damaged. Three *Embothriums* are unharmed, but one, the largest, a magnificent specimen approaching 30 ft. in height, in a low and damp situation, is damaged and will lose all its leaves. *Magnolia Campbelli*, growing near it, is also damaged. Five species of *Eucalyptus*, one, *E. amygdalifolia*, between 20 ft. and 30 ft. high, are quite dead, but seedlings of *E. coccifera*, though slightly injured, are alive, as is also a huge umbrageous tree, with a trunk 5 ft. or 6 ft. in circumference, incorrectly named *E. montana*, from the highlands of Tasmania. A beautiful specimen of *Cantua dependens* is quite dead, and a tall *Acacia* dead, both are much injured, but may recover. *Fortunia sinensis* is dead, *Laurus aromatica* is killed to the ground. Seedling *Bambusa arundinacea* are injured, but many Chinese species have done well. The Japanese *B. Mutsake* is wholly uninjured, and forms huge verdant masses. The following are quite safe, viz., *Olea ilicifolia*, *Ilex latifolia*, *Acacia Nenu*, *Morus hispanica*, *Oreodaphne californica*, *Choisya ternata*, *Desfontainia spinosa*, *Drymys Winteri*, *Pyrus Maulei*, and *Elgworthia chrysantha*.

Combe Royal, Kingsbridge.

EFFECTS OF THE WINTER IN NORTH DURHAM.

AT last the snow is gone, and we may now somewhat safely predict that we are clear of the tyranny of the storm king, who has maintained his supremacy since the middle of November. The extraordinary weight of snow that fell at various times has been very destructive to the finer kinds of shrubs and specimen Conifers. As I mentioned in a former note, I had seen several *Beeches* broken at Lumley Castle; since then I have witnessed great destruction in the same direction. Splendid old *Cedars* of Lebanon have had their limbs split off by the bole, and some huge evergreen Oaks have not fared much better; in fact, all the larger trees have carried their heavy burden till at length it has disfigured them for ever. In spite of this heavy covering of snow, the frost, which was as remarkable for its severity as the snow was for its weight, has severely injured many of our finest shrubs. Every day sees the ground strewn with leaves of large green Hollies, while, singularly enough, the variegated sorts are apparently little hurt, and the *Laurestinus* has not suffered in the way one would have expected. A handsome *Araucaria imbricata*, something like 20 ft. high, has not a brown spine nor a broken branch on it. A large *Hydrangea*, which has been planted out many years, is showing signs of starting into growth, evidently not much the worse for the ordeal through which it has passed. Some of the *Rhododendrons*, of which we have a splendid collection, have had their flower buds killed, but there are still plenty left to make a good display. *Roses* have suffered as much, if not more, than anything else, the mischief showing itself in the form of a narrow brown collar, sometimes nearly at the bottom of the shoot, necessitating its entire removal. In an unheated house, where some zonal *Pelargoniums* had been left, they are completely killed, while, in the same house, *Selaginella denticulata* is growing as luxuriantly as if in a Fernery.

Passing to the kitchen garden matters are even worse; almost all the autumn planted Cabbages have perished. Some Broccoli may make small heads, but the greater portion of it has failed, and so have autumn sown Onions, while Globe Artichokes will scarcely recover. Owing to the early advent of winter, and the uninterrupted stretch of continued bad weather, kitchen garden work is a long way behind, and now when the severe weather is gone, bringing up work in arrears, and the usual extra push that needs to be made at this season, will occupy all hands. Land that has been dug during winter is now in capital working order, but that which has lain undug will be in a bad state, particularly in the case of strong soils; still it will, perhaps, be the best plan to dig and crop it as we go on, as the land will not be much benefitted by the short exposure it must necessarily have before being wanted.

To predict the success or otherwise of our fruit-crops may yet be premature, but to all appearance we shall have good crops. Peaches, Nectarines, Plums, Apricots, Pears, and Morello Cherries on walls, are thickly set with plump, healthy bloom buds. Standard and pyramid Apples and Pears have a fine healthy appearance. Small fruits also look well, and what is very odd, the birds have not taken to the buds this year as usual. With immunity from frost, we may thus fairly calculate upon having a good fruit year, but should late frosts occur, or easterly winds prevail when the trees are in bloom, we here, at least, within seven or eight miles of the German Ocean, may count upon the destruction of our crops. TYNEDALE.

THE INDOOR GARDEN.

CELOSIAS AND THEIR CULTURE.

THERE are many fine flowering annuals for both out and indoor decoration, but I know of none more ornamental or useful than the Celosias. They may be had in flower from June to autumn, and during all that time they may be used for room or conservatory embellishment with excellent effect. They have no scent worth mentioning, but the colours of the flowers are both interesting and varied. As with other annuals there are many strains of Celosias; some exhibit a good deal of the cockscomb style, others form long narrow inflorescence, but the best produce plumes more feathery than the finest heads of Pampas grass. It may be said these are the only kinds really worth growing, so very much superior are they to all others, but the worst of it is they are rather difficult to secure. The best way is to buy a mixed packet of seed, grow the whole well, and save seed only from the very best; we thus improve the strain, especially if seed be saved in this manner year after year. Celosias produce seed freely, but, as is often the case, the best are always the shiest in this respect. When the flowers show signs of decaying, the plants should be placed in some warm, dry, airy house, to prevent them from damping and to ripen the seed. This should be gathered a little before it is fully ripe or it may drop out. The best, or, in fact, the only mode of propagating the Celosia is from the seed. It may be sown from February to July, firstly to produce early plants for midsummer and autumn blooming, and lastly for plants to bloom late in autumn and midwinter. The seed may be sown either in pots or pans; we generally use 8-in. pots for the purpose. They are filled quarter full of crocks, over which is put some rough material, and the remainder is made up of a mixture of loam, leaf-soil, and sand in equal parts. This compost is made moderately firm, the seed is sprinkled thinly on the surface, and then covered over with a little of the same mixture; a gentle watering is then given, and the seed soon germinates in either an air heat of 60°, or a bottom heat of 70°. Under the latter treatment the young plants come up sooner, but healthy young seedlings may be secured both ways. As soon as the young plants are about 2 in. high they are carefully lifted and potted singly in 3 in. pots, using the same kind of mixture as that in which the seed was sown, and giving them the same temperature, &c., as before. From this time onwards there is only one pest that is to be guarded against, and that is the red spider; it is particularly fond of the Celosia, and very often spoils the plants when not checked. When young the leaves may be sponged if there be any sign of spider, and as the plants become large, frequent syringing will keep it in subjection.

As the young plants gain size it will be found that the pots soon become filled with roots, when a shift into larger pots

must be given, the size being determined by the amount of roots; previous to flowering, care must be taken that they never get pot-bound, for when that occurs they invariably start into bloom, thus affording a certain means of flowering them at any time and in any sized pot. From 3-in. pots they should be shifted into 5-in. or 6-in. ones. Fair-sized plants may be bloomed in the latter size, and when they are wanted for small vase decoration this size will be found very useful. After being taken from the 3-in. pots well-decayed cow manure should be substituted in the potting compost for the leaf soil, as Celosias are rather strong-feeding plants. When they have been potted a second time they may be again placed in a mild, close atmosphere, but after the beginning of June they succeed very well in an unheated frame, where, being near the glass, dwarf, sturdy plants are the result. They may be placed in the conservatory just as the flowers are forming, but they should not be taken into a room until they have nearly or quite expanded, and the time during which they remain in bloom will surprise people not acquainted with them. Three months is not an unusual time for them to retain all their good properties in this respect; owing to this, plants which come into bloom in July will be found in the same condition in the beginning of October, and plants just coming into bloom in October will remain so until after the new year. The latter stock of plants should be kept hardy, that is, not grown in a close, warm place, but in frames fully exposed to the sun. The younger and more vigorous the plants are during the short days the better do they bloom and withstand a low temperature. When in flower, especially in winter, they do not require much heat; a temperature anywhere between 35° and 60° suits them. What they want more than heat is a dry atmosphere, as damp soon rots the feathers. It is chiefly on this account that they succeed so well in rooms. I have also found them to last a very long time in church decoration, a point of importance in the case of those who (like ourselves) have to decorate the church nine months out of twelve. If any one imagines that Celosia culture is a difficult matter, let me assure them to the contrary; no plants are more easily grown, and none will yield a better return for attention paid to them, whether that be much or little. CAMBRIAN.

Forced Shrubs.—It may be well to tell the inexperienced that when hardy shrubs that have been forced are taken out of conservatories, &c., they should not be placed out-of-doors under shrubs, or in any out-of-the-way place; on the contrary, they should be put into some place to make their growth before being put out. Thus treated, they will force much more easily the next season. Some Rhododendrons thus managed for four years have done good service, and the same may be said of Ghent Azaleas.—J. CROOK.

Camellias, &c., at Kingston.—There are few, if any, cultivated plants that exhibit such a difference in the length of time during which they will keep on flowering when planted out as compared with being grown in pots or tubs as Camellias do. We lately saw (second week in March), in Messrs. Jackson's nursery at Kingston, a number of tall plants occupying a lean-to house facing the north, bearing a considerable quantity of flowers, although they had been in blossom ever since September last, and from that time until now had produced a continuous supply of finely-developed blooms for cutting. Amongst them was the fine old red kind called *eximia*, the beautiful pink-flowered *Fordi*, and the straw-coloured semi-double *ochroleuca*, a great favourite with those who object to formal shape in flowers. This establishment has been long noted for its fine collection of hard-wooded plants, and at no time have we seen them look better than they now do, especially the specimen hard-wooded *Heaths*. Amongst these we noticed grand examples of *Cavendishii*, *Fairreana*, *Candolleana*, *tricolor impressa*, *tricolor speciosa*, *Aitoni*, *Turnbulli*, *semula*, and an unusually beautiful plant of *depressa*, literally studded with flowers just beginning to open. Of less well-known varieties the collection contained *Lindleyana*, one of the very finest high-coloured sorts in cultivation, and *mundula*, a distinct kind, the flowers of which are star-shaped, opening flat like those of *E. delecta*. Amongst greenhouse plants we remarked the true variety of *Aphelaxis rosea*, 3½ ft. through, and examples of the dark-coloured *A. macrantha purpurea*; *Boronia serrulata*, was thickly set with flower-buds; numerous large plants of *Phœnocomas*, *Pimeleas*, *Hedarasas*, *Staticeas*, and some handsome *Azaleas*, retaining plenty of healthy foliage, which augurs well for their flowering satisfactorily. We likewise saw a number of *Vandas* in more than ordinary

strong condition, *Dendrobium Parishii*, and *D. Bensoniae*, little over a twelvemonth imported, have pseudo bulbs from 15 in. to 18 in. long; *Dendrobium barbatulum* has been in bloom five or six weeks; *Calogyne cristata* is coming on with a number of flower-spikes, which appear as if they would not open before the middle of April, showing the length of time it may be had in flower, with a sufficient quantity of plants at command.—F. G.

LACHENALIA PENDULA AS A BASKET PLANT.

This is grown to perfection in baskets in Messrs. Veitch's nursery at Chelsea. The baskets, which are made of wire, are round, lined with Moss, and filled with good soil. The bulbs are planted at equal distances apart in the Moss all over the baskets, and when in flower they form large balls of brilliant blossoms and deep green leaves. The bulbs are taken out yearly; the baskets are refilled with fresh soil and planted again. Abundance of water is necessary after the plants commence to grow, and this can best be supplied by immersing the baskets wholly in a tank. Grown in the manner just described *Lachenalias* thrive amazingly, and are seen to better



Basket of *Lachenalia pendula*.

advantage than when grown in any other way, whilst for hanging either in windows, porches, or conservatories, they are both useful and attractive. S.

GARDENING FOR THE WEEK.

Flower Garden.

Ivy cut or clipped before new growth commences will present a very different aspect throughout the season from what it will do if deferred till new growth has commenced; therefore, let it be cut at once. Hedges, screens, lines, or belts of shrubs that have to be kept clipped in a formal manner should now be operated on. Many common Laurels, Bays, and Laurustinus have been terribly injured by the severe weather, hence the pruning of these had better be deferred for a few weeks longer, till it can be seen as to whether or not they should be cut right down and allowed to break from the bottom. Any that now seem dead had better be headed back at once. Climbing Roses, Clematises, Virginian Creepers, Wistarias, and other climbers will now require attention as to pruning, regulating, and nailing, and any that need additional stimulus to ward off parasites and promote more vigorous growth should be top dressed and mulched. Herbaceous plants may now be divided, regulated, and rearranged; many kinds that are just starting into growth, such as *Pyrethrums*, *Potentillas*, *Asters*, *Phloxes*, and *Delphiniums*, will bear division without the least apparent check, and retain their vigour longer than when left in the same position for years. When replanting, take pains to arrange the plants, both as to height of growth and colour of flowers, in order that the tall growers do not overshadow the dwarfier kinds, or, that there shall be several plants in juxtaposition of the same colour. When the arrangements are finished, any vacant spaces there may be will come in for the sowing, or planting out, of *Sweet Peas*, *Lupins*, *Mignonette*, *Stocks*, *Asters*,

Zinnias, and other annuals, all of which add both to the beauty and interest of such borders. Hints as to other outside operations were given at pp. 184 and 223. The preparation of bedding plants, both from seeds and cuttings, is now the most important indoor operation. If the sub-tropical plants were sown, as recommended, a few weeks ago, they will now be ready to prick out or pot on, as the case may be. After that, till new growth has started, keep them close and shaded, and then grow them in as cool a temperature as is compatible with health and sturdy growth. Seedlings of *Amarantus*, *Perillas*, *Cineraria maritima*, and others of a similar nature, may be pricked off into boxes, and grown in an intermediate temperature. A better plan is to prick them out in heated pits, and as soon as they have become established turn off the heat, and gradually expose them to the atmosphere. *Calceolarias*, *Verbenas*, *Gnaphaliums*, and *Lobelias* may be planted out in turf pits, and covered with straw hurdles, mats, or frigid domo. As we have not the convenience for turf pits, we plant them out in trenches that have been prepared for Celery, and cover with evergreen boughs. Many *Pelargoniums*, for want of room, are treated in the same way, and hitherto the plan has been successful. For vases and basket beds, the Ivy-leaved *Pelargoniums*—many varieties—are invaluable, and cuttings put in now will make good plants by bedding out time. Amongst other appropriate creepers for such purposes may be named *Cobaea scandens*, *Maurandya Barclayana*, *Convolvulus major*, and *Tropaeolum canariense*, all of which are best raised from seeds.—W. W.

Indoor Fruit Department.

Pines.—The earliest Queens will now be swelling fast, and may with advantage have an increased temperature by day and also more air moisture; close up early, say about two o'clock, syringing the walls and floors when closing, and the plants occasionally, especially when the air is parching and the sun powerful. Frequently examine the plants to see if they want water, as they should now incline to the wet rather than the dry side of a medium state of moisture, a condition which is most desirable for plants swelling off their fruit. Remove all gills as they appear, and all suckers, except what are absolutely required to keep the desired stock. The bottom heat should be maintained at 85°, and the top heat according to the weather, that is, if cold north-easterly winds prevail 65° will be sufficient, but at other times not less than 75° should be the rule, and air should be given when the thermometer reaches that point; it should be reduced as heat declines, finally closing with a temperature of 90° or 95°. The last potted suckers will by this time have formed roots, and therefore may be treated as established plants; give more air, and dew them overhead about twice weekly, and if there be no evaporating pans on the pipes syringe the walls and floors, after the manner indicated for the fruiting plants. When the sun is powerful slightly shade for a couple of hours at midday till the plants have become accustomed to the change from clouds to sunshine.

Strawberries.—If we could but annihilate that most persistent enemy—red spider, what a boon it would be to cultivators. Our first lot of plants before the fruit was gathered were badly infested with it, and instead of reserving the plants for open-air planting we have had them destroyed, and recommend others who may be in the same fix to do likewise. Successional batches are not likely to get affected, as the days being longer and brighter less fire heat is needed, and the syringing can be more freely plied. Keep the atmosphere on the side of dryness when the plants are in flower, or the fruit is near maturity, but at all other times have plenty of moisture. When it is necessary to retard ripe fruit, it is easily done by allowing the plants to become moderately dry, and then moving them to a cool fruit room; in such a position we have had them keep in perfect condition for a week, and frequently longer. Precaution must be taken against injury from mice or rats, which may have gained access in the room.

Extracts from my Diary, March 29 to April 5.

FLOWERS.—Boxing and potting *Pelargoniums*. Propagating *Verbenas*, *Mesembryanthemums*, *Lobelias*, and *Ageratums*. Planting out *Gladioli*. Re-arranging houses and sowing seeds of *Poinsettias*. FRUIT.—Shifting *Strawberries*, the fruits of which are swelling, into a warmer house, and moving those which are ripening fruit into a coolinery, in order to improve their flavour. Tying and stopping the shoots of *Cucumbers*, and putting fresh lining to Pine pit. Top-dressing *Strawberry* beds, and making hotbed in Pine pit on which to plant Melons. Tying in shoots of *Peach trees* in second house. VEGETABLES.—Sowing *Major Clarke's Celery* in boxes in frames. Preparing old *Rhubarb* ground for *Potatoes*. Sowing *Veitch's Self-protecting Broccoli* and *Autumn Giant Cauliflower* in frames. Planting *Myatt's Prolific Tomato*, and preparing sets for the main field crop. Pricking out *Tomatoes* from seed pans into boxes for planting out-of-doors in June.

PLATE CLXXIII.

THE CALCEOLARIAS.

(WITH A COLOURED PLATE OF *C. FUCHSIÆFOLIA*, A NEW SPECIES.)

Drawn by CONSTANCE PIERREPONT.

FASHION seems as potent in the garden as in the boudoir, and, in the restless hankering after something new, many an old favourite is neglected for, or supplanted by, something less deserving of our attention. This is inevitable, and perhaps not so much to be deplored, for we cannot always be admiring the same flowers, any more than we can derive enjoyment from hearing the constant repetition of one tune, be it ever so sweet; and, after all, as old fashions in dress are revived, so will plants that were formerly in favour come into vogue again. It is true, to a certain extent, that bedding Calceolarias were in fashion until they were, or appeared to be, worn out, and many a gardener would rejoice could he depend upon them as heretofore. It is a singular fact, that they still thrive unaided in some places, whilst in others all the skill that can be brought to bear on their treatment is unavailing and fruitless. But the original wild forms have almost entirely disappeared from British gardens, many of them doubtless because they could not hold their own in competition with more attractive introductions. The genus *Calceolaria* is, however, so rich in species, and presents such a wealth of variety in form and colour that it deserves a few columns by way of a re-introduction to the lovers of flowers. It comprises upwards of 100 distinct species, including annual and perennial herbs and dwarf shrubs. Its geographical area almost exactly coincides with that of the genus *Fuchsia*, ranging, as it does, from Mexico to the southernmost point of South America, and re-appearing in New Zealand; but, unlike the *Fuchsia*, it is not represented on the eastern side of South America, at least only in the extreme south. The greater number of the species inhabit mountain valleys, ascending to an elevation of 13,000 ft. to 14,000 ft. within the Tropics, where they enjoy a moist equable climate, which is never very hot and never very cold. Some few occur in the arid districts of Chili; they find their greatest concentration in Chili, Peru, and Ecuador; only about four species are known to grow in Central America and Mexico, and two have been discovered in New Zealand. In foliage they offer as great a variety as the most polymorphous genus, for, in addition to those described below, there are such species as *pinifolia*, *ericoides*, *hypericina*, &c., names sufficiently indicative of their peculiarities without further explanation. Of their duration mention has already been made. With regard to the flowers, the species included in the following selection illustrate their whole range of variation. The peculiarities of the flowers of each species being given in the descriptions, it will suffice here to explain their general character. The corolla belongs to the bi-labiate or two-lipped type, but in most species, and especially in the hybrid races met with in gardens, one of the lips is reduced to very small proportions, whilst the other is enormously developed in the form of a pouch. On the other hand, *C. violacea* and others have an almost regularly two-lipped corolla, the lips being concave instead of pouched. In all the species known, save one, the flowers contain only two stamens each, but in this (*C. triandra*) there are three fully-developed stamens. Not nearly all of the species in this selection are deserving of cultivation in the same collection from an ornamental point of view, but their respective merits depend greatly upon the taste of the cultivator. Independently of the hybrid races, herbaceous and shrubby, the history and parentage of which are given in some detail under the species concerned, these here enumerated are some of the most ornamental:—*C. hyssopifolia*, *Henrici fuchsiæfolia*, and *violacea* (shrubs); *C. integrifolia*, *alba*, *amplexicaulis*, *thyrsoiflora*, and *flexuosa* (half shrubs); *C. piscoensis*, Darwini, Fothergillii, Pavoni, arachnoidea, corymbosa, plantaginea, and tenella (perennial herbs); and *C. chelidonioides* (an annual herb). It is difficult to classify the species according to their nature and duration, as some of them are herbaceous or half shrubby, according to the climatal conditions, but some approach to this has been attempted. Although a few of the species are sufficiently hardy to with-

stand the ordinary winters of the south-west, it should be borne in mind that Calceolarias are essentially greenhouse plants, and several of them are of special value as winter-flowering plants. Mr. T. Smith (Rodger, McClelland & Co., Newry) kindly forwarded some practical notes, which are embodied under the respective species almost in his own words.

Shrubby species.

1. *C. fuchsiæfolia*. *—Though closely allied to *C. cerasifolia*, *C. padifolia*, and specimens named *C. deflexa*, in Kew Herbarium, it does not exactly agree with any of these. Possibly a revision of the genus with more ample materials may lead to its identification with a described species, but in the meantime it may bear the name here proposed for it. Our plant differs from its nearest allies in being almost entirely destitute of hairs and any glutinous exudation, and more especially in the shape of the corolla. The absence of hairy appendages and glutinous matter may be due to the different conditions to which the plant is subjected under cultivation, and with regard to the shape of the corolla, this is a character not easily determined from dried specimens, though dried specimens of a plant sent to Kew many years ago by Messrs. Veitch are easily recognisable as the same species. When out of flower it exhibits a marked resemblance in habit and foliage to some of the hybrid *Fuchsias*, which have the under side of the leaves of a pale or silvery hue. It is an erect shrub, 2 ft. to 3 ft., or perhaps sometimes more, in height, with glossy foliage. As the accompanying plate does not show the peculiarities of the shape of the corolla, it may be briefly described. The lips are nearly equal in diameter, the lower one, however, being saccate and very much inflated, has the appearance of being much larger than the upper, which is almost flat and circular, and intruded around the base of the ovary, the intruded part being furnished inside with a ring of white glutinous hairs. None of its immediate allies appear to be, or have been, in cultivation. There is, however, a cultivated specimen of *C. tetragona* in Kew Herbarium, a species of the same section, with stout, distinctly quadrangular stems, broader, thicker, glutinous leaves, and a larger greenish-yellow calyx. Several of the species of this section named, all of which are Peruvian, are highly ornamental. Of this particular one Mr. T. Smith says, "it requires to be grown freely during the summer months in a cool, shady situation, as its glossy leaves are most impatient of summer sunshine. It should be housed before danger from frost arrives, and it will then come into bloom about October and continue a beautiful mass of golden flowers throughout the winter months. Unquestionably it is the handsomest yellow-blossomed, winter-flowering plant in cultivation." The accompanying plate was drawn from a living plant supplied by Messrs. Rodger, McClelland & Co., nurserymen, Newry, County Down, Ireland. Most likely a native of Peru, where it and all its nearest allies are at home.

2. *C. hyssopifolia*.—A shrub of narrow erect habit, having rather slender stems well furnished with narrow leaves, 1 in. to 2 in. long, more or less glutinous, and clothed with a white fur on the under surface. Flowers of a clear pale yellow, in shape resembling those of the well-formed herbaceous hybrid class, but with slight indications of lobing around the circumference, and scarcely an inch in diameter. Certainly a very attractive species. It is a native of the Quitian Andes, at an elevation of 9,000 ft. to 13,000 ft., and was introduced into this country by Prof. Jameson, of Quito, who sent it to Mr. I. Anderson-Henry, of Edinburgh, in whose garden it flowered in 1865; and it was figured in the "Botanical Magazine," t. 5548. *C. Hartwegii*, *lavandulæfolia*, *rosmarinifolia*, and *gossypina* are allied ornamental species, especially the last, not yet introduced.

3. *C. Henrici*.—A handsome shrubby species of comparatively recent introduction, figured in the "Botanical Magazine," t. 5772. It was sent by Professor Jameson, of Quito, to Mr. Isaac Anderson-Henry, of Edinburgh, after whom it was named by Dr. Hooker. Its affinities are with *C. hyssopifolia*, from which it differs in its longer (4 in. to 5 in. in cultivated specimens), broader leaves, and somewhat smaller, more nearly globular flowers, without any indications of lobing around the circumference of the lower lip. The flowers, too, are of a rather deeper yellow. A native of the Andes of Cuenca.

* *CALCEOLARIA FUCHSIÆFOLIA*, species nova.—Fruticosa glabra eglandinosa, 2-3 pedalis; ramis terribus gracilibus; foliis oppositis petiolatis, Fuschie crissidum, ovato-lanceolatis, 2-3 pollicibus callosae, nervis acutiusculis, discoloribus, supra viridibus reticulato venosis, subtus argenteis, petiolo supra canaliculato leviter barbato, semipollicari; floribus flavis cymoso-corymbosis gracilibus pedicellatis; calycis laciniis rotundato-ovatis, acutis reflexis, nunquam leviter glutinosis; corollae labiis subaequalibus, inferiore elliptico saccato-calceiformi, ultra medium apertis, superiore latiore rotundato, valde compresso, basi circa ovarium intruso icuto annulo villosulo-glanduloso praedito; staminibus declinatis, filamentis brevibus, antheris magnis; ovario glabro, stylo filiformi. Affinis *C. cerasifoliae* et *deflexae*, sed differt, foliis discoloribus eglandinosis atque etiam forma corollae, &c.—W. B. HENSLER.



4. *C. violacea*.—This belongs to a small section of the genus, formerly regarded as generically distinct, under the name *Jovellana*, on account of the lips of the flower being nearly equal and concave instead of pouched, forming together a gaping, mouth-like corolla, and on account of the anther cells being contiguous or confluent; but connecting links of every grade have since been found. *C. violacea* is a spreading, much-branched shrub, 3 ft. to 4 ft. high in cultivation, with deeply lobed leaves, 1 in. or less in length, and lilac blue flowers spotted with yellow and red inside, and from $\frac{1}{2}$ in. to 1 in. long. It was introduced many years ago from South Chili, and figured in the Bot. Mag., t. 4,929. One collector (Bridges) states, on a label in Kew Herbarium, that it delights in decomposed granite. Mr. Smith informs me that it is the only species of *Calceolaria* hardy at Newry, and this season it has been cut to the ground by the frost, but shortly after the frost broke it begun to show signs of growth. In ordinary seasons it blooms freely in April and May on shoots of the preceding season's growth. *C. triandra* has the habit of *C. violacea* and small, pinnately lobed leaves, but it is remarkable in the genus for having three stamens, instead of only two.

Half-Shrubs or Under-Shrubs.

5. *C. punctata*.—A half-shrubby species, with flowers similar in shape to those of *C. violacea*, but rather larger, and almost exactly the habit, foliage, and inflorescence of our native Figworts (*Scrophularia*). The leaves are 3 in. to 5 in. long, oval, and doubly toothed; the flowers, according to Dr. O. Cunningham, naturalist to the surveying expedition of H.M.S. *Nassau*, are white spotted with lilac, and the whole plant has a most unpleasant odour. Mr. R. Pearce introduced it in 1862 for Messrs. Veitch, and it is figured in the "Botanical Magazine," t. 5392. Although the flowers are so like those of *C. violacea*, the resemblance ceases there. The variety figured in the "Botanical Magazine," has lilac flowers with a yellow blotch on the inside of the lower lip. A very common Chilean plant.

6. *C. polifolia*, Hooker, Bot. Mag., t. 2897.—An erect branching undershrub, with small ovate or oblong leaves, clothed with a white felt-like down. The flowers are few, and about a third of an inch in diameter, subglobose; the upper lip yellowish white, about half the size of the other, and turned down upon it; lower lip of a more decided yellow. Introduced from Chili by Mr. Cruickshanks, in 1826. There are about half-a-dozen others of this section, not any of them remarkable for their beauty.

7. *C. flexuosa*.—A very fine subshrubby species, with cordate coarsely toothed leaves, 3 in. to 4 in. long, and large terminal panicles of golden yellow, hairy, nearly globular flowers about 1 in. in diameter. Stems rather slender and weak, leaves thin, calyx large, greenish yellow, resembling that of *C. Pavonii* and its allies, which are, however, very different in their habit and foliage. Mr. W. Lobb sent seeds of this from Peru to Messrs. Veitch & Sons, of Chelsea, who succeeded in raising it; and it was figured in the Botanical Magazine, 1859, t. 5154.

8. *C. bicolor*.—A diffusely branching undershrub, with ovate coarsely-toothed stalked leaves, 2 in. to 3 in. long, and yellow and white flowers of medium size, remarkable for the lower lip being curved completely over the upper very small one. A native of Peru, whence Mr. Cruickshank sent seed about the year 1830. It is figured in the Bot. Mag., t. 3036, under its right name, and in the Bot. Reg., t. 1374, under the name of *C. diffusa*. Mr. T. Smith says this makes a useful greenhouse plant in winter, if grown on freely during the previous summer. There are upwards of half-a-dozen others of the same section, of which one at least, *C. flexuosa*, described above, is more ornamental.

9. *C. verticillata*.—A diffusely branching, half-shrubby species having slender, hairy branches, clothed with ovate, sharply serrated leaves, from 1 in. to 2 in. long and terminating in a narrow spike of lateral clusters of small, deep yellow flowers. The corolla is peculiar in the upper lip being altogether suppressed, and in the lower one being very slender at the point of attachment, and produced upwards in a curved, inflated pouch. Introduced from Lima in 1830 by Mr. Cruickshanks and figured in the Bot. Mag., t. 3094, under the erroneous name of *C. angustiflora*. It is more curious than beautiful.

10. *C. thyrsoidea*.—This and *C. alba*, among suffrutescent species, have a remarkably slender, erect habit of growth, and the stems are crowded with linear, coarsely toothed leaves, usually not exceeding 1 in. in length in this species, though there are forms having leaves intermediate in length between these and those of *C. alba*, which are 2 in. long; hence they may be varieties of one species, for there is little, if any, difference in the flowers, except colour. The inflorescence is long, narrow, and dense, and the nearly globular, deep yellow flowers are from a third to half an inch in

diameter. A common species in Chili, where it bears the name of *Palpe*, and is used for dying yellow. It was introduced in 1828 by Dr. Gillies, and it is figured in the Bot. Mag., t. 2915, where it is stated that the blossoms have a slight fragrance, not unlike that of the flowers of the *Laburnum*. This, it is recorded, has hybridised with *C. Fothergillii*, particulars of which are given under that species.

11. *C. alba*.—An undershrub with the habit, foliage, and flowers of *C. thyrsoidea*, save that the leaves are longer and the flowers white. A very pretty species, raised by Messrs. Veitch from seeds sent to them from Chili by Mr. W. Lobb before 1844, and figured in the Bot. Mag., t. 4157. It is said to be rare in its native country.

12. *C. adscendens*.—This species is, or rather was, better known to gardeners under the name of *C. rugosa*, Bot. Reg., t. 1588, though it had previously been published in the same magazine, t. 1215, under the above name. *C. crenata* (Bot. Reg., t. 790) is merely a slight variety of the same species. It is one of the sub-shrubby, yellow-flowered species that has been used for bedding, though by no means the best. The stems are rather slender with a reddish tinge, and the leaves small, rough, and sharply toothed. Introduced from Chili in 1823.

13. *C. sessilis*.—Allied to *C. integrifolia*, but a more shrubby plant, with distinctly sessile leaves, broadest at the base, and woolly stems, at least, when they are young. A native of Chili, introduced by Mr. Cuming in 1831, and figured in the Bot. Reg., t. 1628. Flowers deep yellow, the upper lip of the corolla two-thirds the size of the lower, and applied to it.

14. *C. dentata*.—Near *C. adscendens*, but having longer leaves, less harsh to the touch and more finely toothed, and larger, more numerous flowers. It is figured in the Bot. Reg., t. 1476, under the name of *C. chilensis*. It was sent from Chile by Mr. Anderson, who was the botanical collector attached to Captain King's expedition. This and *C. adscendens* were probably both concerned in the parentage of the hybrid bedding varieties. *C. andina* is a closely allied species inferior in point of beauty; it was formerly in cultivation and is figured in the Bot. Reg., t. 1576, under the name of *C. Herbertiana* var. *parviflora*.

15. *C. viscosissima*.—This, in many respects, looks like a broad-leaved variety of *C. integrifolia*, and it was published as such in the Bot. Mag., t. 3214; but Lindley subsequently published it as a distinct species, Bot. Reg., t. 1611. In gardens it was called *C. rugosa* macrophylla, and it is recorded that it was raised from seed by Mr. Cameron, of the Birmingham Botanic Garden, but nothing is said respecting the origin of the seed. It is a robust, exceedingly viscid plant, with broad leaves and tawny flowers.

16. *C. integrifolia*.—This, above all others, is the bedding *Calceolaria*. It is an exceedingly common Chilean plant, varying considerably in the width and toothing of the leaves, and in the degree of viscosity of the stems and leaves, as well as in the size and tint of its flowers. The name *integrifolia* is not an appropriate one in the sense it is now generally understood, because the leaves, although undivided, are always toothed. It appears to have been first introduced by the Horticultural Society, in 1822, and figured in the Bot. Reg., t. 744. This has rather broad leaves, whitish underneath, and not unlike those of *Sage*. Plate 1803 of the same work represents a narrow leaved (*angustifolia*) variety; both have bright lemon yellow flowers, with the upper lip of the corolla half the size of the lower, and closely appressed upon it. *C. rugosa*, Bot. Mag., t. 2523, seems to be a variety differing in the tomentum on the under surface of the leaves, being of a rusty colour and in the flowers being of a deeper yellow. There are several other synonyms of the species.

17. *C. crenata*.—This is figured in the Bot. Mag., t. 4154, under the name of *C. floribunda*, and differs from typical *C. amplexicaulis* (figured in the same work, t. 4300) in the leaves being rounded not cordate, and stem-clasping at the base, and in the flowers being of a paler yellow, but, at the most, it can only be a slight variety of the same species. It was sent to Messrs. Veitch, from Chili, by W. Lobb, in 1843.

18. *C. amplexicaulis*.—A few years ago this was almost as familiar in the flower garden as *C. integrifolia*. It is the one with soft, dark green leaves clasping the stem, and a profusion of pale yellow flowers. It is true the Bot. Mag. figure, t. 4300, represents rather a deep yellow almost orange flowered variety, under this name, and a pale yellow one, which I take to be a variety of the same, under the name of *C. floribunda*, here given under *C. crenata*. *C. amplexicaulis* inhabits Peru and Ecuador, and was introduced by Mr. W. Lobb about thirty years ago.

Herbaceous Perennials.

19. C. Pavonii.—This is one of a group of about six herbaceous species, remarkable for their robust habit, large, coarsely toothed leaves, with usually a triangular blade and broadly winged perfoliate petiole, and for their very large calyx. *C. Pavonii*, Benth., Bot. Mag., t. 4525, is a native of Peru, and is first cultivated in this country, it appears, by Messrs. Lucombe, Pines & Co., of Exeter, in 1850. It grows 3 ft. to 4 ft. high, and is everywhere covered with more or less glutinous hairs. The leaves in luxuriant specimens are upwards of 6 in. long, the triangular cordate blade about half of it, and the wing of the petiole increases in width downwards, the wings of the two opposite leaves being connate at the base, thus encircling the stem with a broad, leafy expansion. The showy buff yellow flowers are borne in terminal and lateral corymbs, the entire inflorescence being large and effective. The pale green calyx has spreading sepals 2 in. from tip to tip; the upper lip of the corolla is nearly flat and disk-like, and the lower one is nearly orbicular, very much inflated, about 1 in. in diameter, and curved upwards against the upper one. Mr. T. Smith writes: "This forms handsome specimens, 3 ft. or 4 ft. high; it commences to bloom in the autumn, and continues through the winter; and it is a most distinct and desirable conservatory plant for this season when striking flowering plants are scarce." The other species of this group are *C. tomentosa*, a very woolly plant with ovate leaves; *C. calycina*, remarkable for its yellow calyx, as large as that of *C. Pavonii*, and for its flowers being in umbels or trusses like a *Pelargonium*; *C. perfoliata*, this also has a yellow or greenish yellow calyx and subumbellate flowers, but the flowers are smaller than those of the last, and the blade of the leaf is broader at the base; finally, *C. dilatata* is relatively a very slender plant with smaller leaves and flowers; they all inhabit the same region as *C. Pavonii*.

20. C. piscacensis.—One of the most distinct species of the genus, having leaves something like *C. amplexicaulis*, but easily distinguished from all others hitherto introduced, by its large brilliant orange red flowers. It is a tall, robust, herbaceous perennial, with deeply toothed, rough leaves, recurved at the margin, and a succession of shortly stalked cymes of flowers in the upper part of the stem, forming together an inflorescence 6 in. to 9 in. long. The upper lip of the corolla is small and concealed by the lower one, which is abruptly bent upon itself and over the upper one. Introduced by Messrs. Veitch from Peru through their collector, Mr. Pearce, and figured in the Bot. Mag., 1867, t. 5677.

21. C. lobata.—An ascending or trailing, branched, more or less glandular pubescent herb, with roundish, cordate lobed leaves, about 2 in. in their greatest diameter, and borne on relatively long petioles; flowers clear yellow spotted with red inside, and arranged in loose panicles. Upper lip of the corolla small; lower one large, sacate, suddenly bent upwards about the middle, and recurved on itself. Mr. Smith says, "this flowers in the freest possible manner all through the autumn, winter, and spring months, and is a most useful basket plant, or to hang over the edge of the greenhouse stage." I have seen no record of the date of introduction of this species, but it is figured in the Bot. Mag. for 1877, t. 6330, from a plant furnished by Messrs. Veitch. It is a distinct and attractive species, native of the mountains of Peru.

22. C. crenatiflora.—Although an old name, the species to which it properly applies was published in Sweet's Brit. Fl. Gard., 1822, second series, t. 155, on its introduction into this country under the name of *C. pendula*. A better figure of it may be seen in the Bot. Mag., t. 3,255. It is a robust plant, with larger stem leaves than *C. corymbosa*, and equally as large flowers, which are yellow dotted with red. The calyx is relatively large, the upper lip of the corolla very small, and the larger lower one sacate with a small opening and notched and grooved in its lower part. There seems to be indications in some strains of hybrid *Calceolarias* that this species was concerned in their production, particularly in the long, pendent, grooved, and crenate corolla. According to Gay it affects humid situations in its native country, Chili. *C. glandulosa* is an allied species, with small yellow or white flowers.

23. C. racemosa.—This is a herbaceous species, closely allied to *C. corymbosa*, but inferior as an ornamental plant. It is a Chilean plant, and was in cultivation in this country in 1830, when it was figured in the Bot. Mag., t. 1,313, under the name of *C. Herbertiana*.

24. C. corymbosa.—One of the parents of the hybrid race, and the one whose characteristics are most prominent in the strains cultivated at the present time. This species gave size to the flowers, the yellow element in colour, breadth to the leaves, and robustness in habit; whilst *C. purpurea* and *C. arachnoidea* gave shape and the other colours to the flowers. *C. corymbosa* was introduced from Chili about the year 1822, and was figured in the Bot. Reg., t. 723,

from a plant raised in Lady Tankerville's garden at Walton-on-Thames. It has large, oblong, rich yellow flowers, with a large opening to the lower lip. The commonest species in Chili, ranging from Coquimbo to Valdivia, Valparaiso, Santiago, &c. The following is a condensed account of the history of the early hybrids of the herbaceous class. *C. Youngi*, Bot. Reg., t. 1448, was the first hybrid of this class of which a coloured plate was published, if not actually the first one raised. Further particulars respecting this will be found under *C. arachnoidea*. In London's "Gardeners' Magazine" for 1830, p. 493, it is stated, in an extract from the "Edinburgh Philosophical Journal," that Mr. Morrison, gardener to Lord President Hope, Granton, being aware that several of the finest species of *Calceolaria* were shy in producing seeds, suspected that this defect might be corrected by applying the pollen of certain kinds to the stigmata of others; and he first has had the merit of presenting to the florist hybrids thus produced, which equal if they do not surpass in beauty any of the species. Mr. Morrison succeeded in intercrossing *C. corymbosa*, *C. arachnoidea*, *C. plantaginea*, and *C. Fothergillii*. In the same periodical, 1832, p. 43, it is stated that Messrs. Young purchased the stock of these Scotch-raised hybrid *Calceolarias*. In July, 1831, Messrs. Young exhibited some of them, as well as their *C. Youngi*, at the Horticultural Society's Rooms. In 1832, Mr. Atkins, nurseryman at Northampton, sent a beautiful hybrid which he had raised to London, who states, Gard. Magazine, 1832, p. 473, that it was very much like *C. Youngi*. It was figured in Sweet's "British Flower Garden," second series, plate 168, under the name of *Atkinsiana*. Plate 162 of the same work is a representation of *C. Martiana*, the variety mentioned under *C. Fothergillii* as being a hybrid between that and *C. corymbosa*. It certainly has the long flowers with the very open lower lip of *C. Fothergillii*, but there are wild specimens of *C. corymbosa*, itself a very variable species in a wild state in Kew Herbarium, almost exactly like the plant represented, and, although it is stated that *C. Fothergillii* was the female parent, it is possible that there was some mistake. The two species are so very different that one would not expect them to intercross. Another hybrid, *C. Wheeleri*, Sweet's "British Flower Garden," second series, t. 130, was raised by Mr. G. Wheeler, nurseryman, Warminster, from a hybrid between *C. purpurea* and *C. corymbosa*, fertilised again by *C. purpurea*. It has small, though regular, inflated flowers of a rich dark red. To complete the history of hybrid *Calceolarias* would occupy too much space, and probably interest only a few readers; suffice it then to say that the idea having once been made known, the earliest hybridisers soon found imitators all over the country, improvement succeeded improvement, and the first hybrid varieties which were originally sold at high prices soon became valueless.

25. C. arachnoidea.—This species deserves our attention, because it was one of the parents of the earliest hybrid herbaceous *Calceolarias*. It is a remarkable and very distinct species with large leaves, in shape like those of the hybrid, but clothed with a silvery, dense, felt-like down. The flowers are of a rich purple, but somewhat crumpled and rather irregular in shape. It is a native of Chili, and was introduced to this country about the year 1827. There are figures of slightly different varieties of this species in the Bot. Mag., t. 2374; and the Bot. Reg., t. 1454. This species is of some economic importance in its native country, as its roots furnish a red dye, superior, Bridges states, on a label in Kew Herbarium, to Brazilian wood for its fine colour and durability. Dr. Gillie's note respecting this species in the Bot. Mag., plate 2925, seems worth reproducing here. "The *Calceolaria*," he says, "described by Dr. Graham, under the name of *C. arachnoidea*, and to which I had assigned the specific appellation of *C. tinctoria*, in consequence of its utility in dyeing, I first found near the silver mines of San Pedro Nolasco, on the summit of the mountain so called, near the junction of the river Mapu, with the Rio del Yeso and del Volcan. On a subsequent journey across the Cordillera, further to the south, and opposite to San Fernando, I also met with it in abundance growing in the most elevated valleys which I visited in the vicinity of La Casa de las Damas. Here many people were employed in digging up the roots, which they dry and collect in bundles for sale. In Chili, where this plant is in great use, under the name of *Reibun*, for dyeing woollen cloths of a deep crimson colour, the alum earth employed as a mordant in this process is obtained abundantly from a mountain in the neighbourhood. This plant grows in hard gravelly soil, where the fibrous roots penetrate in all directions a circumstance which renders the collecting of it to any considerable extent a work of time and labour." Gay, "Flora Chilena," p. 182, states that it is common in the mountains of Chili, from Coquimbo to Concepcion. *C. cana* is a closely allied species, with yellow flowers the roots of which are also used to dye red. With regard to the part that *C. arachnoidea* has played in the production of the hybrid race of herbaceous *Calceolarias* which has now been brought to such per-

fection, we have fortunately the best of evidence. Plate 1,413 of the "Botanical Register" is a representation of C. Youngi, which, it is there stated, was raised in 1830 by Messrs. Young, of Epsom, from a plant of C. arachnoidea impregnated with C. corymbosa. It is a very pretty variety, in which the colours of the flowers of the two species are combined, but the plum purple or reddish violet of C. arachnoidea is intensified into a very dark purple brown, the whole of the top of the lower lip being of that colour and the rest yellow. Further details respecting the parentage of hybrid herbaceous Calceolarias will be found under C. corymbosa and C. purpurea.

26. C. purpurea.—An erect herbaceous species, with leafy stems from 1 ft. to 2 ft. high, terminating in large, loose corymbs of numerous small, lilac-purple flowers. The stalks leaves are coarsely toothed, rough to the touch, and more or less glutinous. The flowers are about $\frac{1}{2}$ in. in diameter, both lips of the corolla inflated, the upper one about half the size of the lower, and closing like a lid over the opening of the lower lip. Seeds of this species were sent by Mr. Cruickshanks from Chili to Edinburgh and Glasgow in 1826. It appears to have been one of the parents of some of the early hybrids, but there is hardly any trace, if any, of it in the race of hybrids now cultivated. For particulars respecting these early hybrids, see under C. corymbosa and C. arachnoidea. There is a very pretty and singular Calceolaria figured in Sweet's "British Flower Garden," second series, t. 244, under the name of C. purpurea var. *pieta*. It was supposed to be an accidental variety of C. purpurea, from which it differed in nothing except the colour of its flowers, and it was raised by Mr. Wheeler, nurseryman, of Gloucester. The flowers are white, with a band of bright purple around the opening of the lower lip, the purple shading off gradually downwards into the white; within, and on the margin of the opening, they are yellow.

27. C. Fothergillii.—A tufted, herbaceous perennial with small obovate-spatulate, glandular leaves, and leafless flower scapes about 6 in. high, and bearing one flower each. A singular plant reminding one of a Butterwort (*Pinguicula*) by its habit and inflorescence. The flowers vary in colour, but they are some mixture of yellow and purple brown; lower lip of corolla about 1 in. long and very open; upper lip reduced to a small disk. This is one of the prettiest and hardiest of the genus, being a native of the Falkland Islands and Patagonia. It was introduced from the former country in 1777 by Dr. John Fothergill, and it is the subject of one of the few plates which adorn the first edition of Aiton's "Hortus Kewensis," and it is t. 348 of the Bot. Mag. This and its allies should be treated as Alpine plants. There are numerous species of the same group equally interesting, but few if any of them are in cultivation. They inhabit the same region and would be hardy in this country under suitable conditions as to soil and moisture. C. nana is a miniature of C. Fothergillii, growing not more than 2 in. or 3 in. high. C. Darwini is a very handsome species of this group, with flowers nearly twice as large as those of C. Fothergillii. If the operators were not mistaken, C. Fothergillii was one of the parents of some of the earliest raised hybrids. Thus in London's "Gardeners' Magazine," 1831, p. 510, it is recorded that Miss Martineau exhibited at the Horticultural Society, a Calceolaria raised from seed of C. Fothergillii, fertilised by C. corymbosa. There is also a very pretty Calceolaria figured in Maund's "Botanic Garden," VII., fig. 595, and it is recorded that this beautiful variety of Calceolaria was raised by Mr. Thomas Williams, gardener to John Willmore, Esq., of Oldford, near Birmingham, from seeds of C. Fothergillii, the flowers of which had been fertilised by pollen of C. thrysioides. This variety was afterwards sent out under the name of C. pardanthera. Judging from Maund's reduced figure it must have been a very handsome variety.

28. C. plantaginea.—Herbaceous, with tufted leaves, not unlike those of the Ribwort Plantain (*Plantago* major), and very slender, erect, leafless flower stems, 6 in. to 9 in. high, and bearing two to four yellow flowers. One of the numerous species introduced from Chili, in 1826, by Mr. Cruickshanks, and cultivated for a time. There is a figure of it in the Bot. Mag., t. 2,805. The corolla is nearly hemispherical and yellow, elegantly dotted with red underneath. C. Hopeana, figured in Paxton's Mag. Bot., ii., p. 286, is said to be a hybrid between this and the very different C. corymbosa.

29. C. tenella.—A pigmy, herbaceous, decumbent species, about 3 in. high, spreading and rooting at the joints; stems thickly clothed with small Thyme-like leaves. Flowers yellow with a few red dots or lines about $\frac{1}{2}$ in. long; both eyes of the corolla saccate, the lower one three times as large as the upper. A very pretty species for the rock garden, introduced from Chili by Mr. G. Downton for Messrs. Veitch, and figured in the Bot. Mag., t. 6,231.

Annual Herbs.

30. C. petiolaris.—A tall, branching, herbaceous plant; stems glandular, leafy; leaves ample, stem clasping, and coarse; flowers

numerous, small, yellow, in loose corymbs; calyx relatively large; corolla about $\frac{1}{2}$ in. in diameter; upper lip nearly as large as the lower, and pressed down upon it. This species was cultivated in the Horticultural Society's Garden, in 1827, from seeds received from Chili. It is figured in the Bot. Reg., t. 1,214, under the name of C. floribunda, and in the Bot. Mag., t. 2,876, as C. connata. Judging from the roots of dried specimens, this species is of annual duration. Luxuriant specimens grow 3 ft. to 4 ft. high, and have quite stout stems. It possesses no special ornamental character.

31. C. pinnata.—A slender annual from 6 in. to 1 ft., or occasionally higher, having elegantly cut foliage, but small, inconspicuous yellow flowers. Although the leaves of the species are very beautiful, it is rather a weedy plant, and would be cultivated more as a curiosity than for ornament. It is interesting as being the first species of the genus cultivated in this country. Introduced from Peru in 1773, through the agency of Sir Joseph Banks, and figured in the Bot. Mag., t. 41. It has become naturalised in India, and last year I saw a specimen of it which had been found growing wild in Sussex. No doubt the seed had been conveyed with some garden refuse to the spot where the plant was found.

32. C. chelidonioides.—As its name implies, this species resembles the Celandine, *Celidonium majus*. It is an annual, from 1 ft. to 3 ft. high, with elegantly cut foliage and rather large, yellow, almost globose, flowers. A native of Peru, growing in ditches, on the banks of streams, and moist, shady situations generally. It was cultivated in British gardens some years ago, and there is a woodcut of it in Paxton's Fl. Gard., iii., p. 143.

33. C. mexicana.—A slender, yellow-flowered annual, growing at a great elevation in the mountains of Guatemala and Mexico, the northern limit of the genus. C. gracilis and C. tenuis are allied species natives of Peru. They are scarcely worth cultivating for any ornamental character which they possess, especially now when the choice of more showy, more elegant, and more lasting annuals is so very extensive.

34. C. scabiosæfolia.—A Peruvian annual, resembling C. pinnata, but of much coarser habit and even less ornamental. Cultivated in England in 1823, and figured in the Bot. Mag., t. 2,405.

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W. B. HEMSLEY.

STORING ICE.

In order to prevent any misunderstanding, allow me to say that the icehouse recommended by Mr. Williams (p. 161) represents a stack built on the principal of a cone, and with a thick column of straw bundles up the centre of it, which, we are told, is to provide for drainage there, but where, it can be demonstrated both theoretically and practically, no melting takes place, and no drainage is needed. His central column of straw is neither more nor less than a clear waste of space, and a channel for heat to waste the ice. Mr. Williams himself furnishes the best argument against central drainage when he says (p. 227) that water poured on the top of the stack "will, by contact with the ice, be almost immediately congealed, and will never percolate to the bottom." Could a better argument be furnished against draining the centre of the heap? If water "never percolates to the bottom," even when it is poured on the heap, what do we want with a funnel up the centre? How also does Mr. Williams reconcile this statement with another (p. 239) on the top of the ice? I never witnessed such a phenomenon. A stack of the shape which he has given never wastes with a flat top, but melts pretty evenly all round, leaving the sides of the house from top to bottom, and retaining its original shape till the very last fragment

disappears, unless it has been interfered with. But people do not take the ice from off the top of the heap if they can help it, but from the side, hence the custom of having a side door in most ice houses. In conclusion, I may say that I never stated that a cone contained more than any other figure in proportion to its "height"—"bulk" was the word used by me, and, of course, I also meant a cone of a height in proportion to its base, or, in short, a heap such as we usually build in our ice houses. In speaking of the cubic contents of any body, I did not suppose it was necessary to be more explicit. "Where," asks Mr. Williams, "is the outer surface of a cellar of ice wholly below the level of the ground?" I reply that the outer surface is where he tells us to place the straw, whether the heap be above or below ground. C.

INDOOR FRUIT GROWING FOR MARKET.

(Continued from page 214.)

GRAPE.—In small gardens at the back of villa residences—of which Mr. Sweet's, at Leyton, is a good example—Grapes are sometimes grown most successfully. In such cases the borders are inside—outside borders taking up too much space where the extent of ground at command is limited; and, moreover, in the case of early houses, the borders would require to be warmed by means of fermenting material of some kind, and this cannot well be afforded, especially in places where it cannot afterwards be made use of in the way of enriching vegetable ground. In a few cases, however, there is a narrow border outside the houses in which the roots are allowed to ramble; but these are principally confined to late or mid-season houses. The rod and spur system of training is the one adopted in such cases, and the chief aim of the proprietor is to get the wood thoroughly ripened previous to pruning; this end attained, success becomes almost a certainty. In pruning, the shoots are not cut closely into the old wood, but a good plump bud, which is almost certain to produce a large bunch of Grapes, is left on each spur, and, should any of the back eyes break, the one bearing the best bunch is selected to remain and the rest are removed. When the spurs become long and scraggy, one or two of the rods are cut down each year and replaced by young ones run up, and in this way strong, healthy, fruit-bearing canes are always maintained. Some of the Vines have two, three, or four rods each—others only one. In some cases the Vines are planted on each side of the house, each row furnishing one-half; but in others only one side is planted, and the canes trained so as to cover the whole of the roof. This latter plan is an excellent one, as, when requisite, fresh Vines can be planted on the vacant side, without in any way disturbing the roots of existing ones; moreover, the newly-planted Vines can be allowed to get well established before the older ones are discarded, and thus neither Vines nor crops are sacrificed. The chief kinds of Grapes grown here are Black Hamburgh, Muscat of Alexandria, Black Alicante, Lady Downes Seedling, and a few Gros Colman. The two former kinds are started in November and December, and furnish ripe, marketable fruit from late in May until the end of August. Gros Colman furnishes fruit during the early part of the autumn and, indeed, up to Christmas; and Lady Downes and Black Alicante keep up a supply until February. Late Grapes are always left on the Vines until sent to market, the mode of keeping them in bottles of water, that of late years has come into practice in private establishments, being too troublesome for market growers. A piece of paper is, however, tied over the top of each bunch to preserve it from damp and dust, and a dry, airy atmosphere is always maintained in the house as long as the Grapes are hanging there. Such Grapes realise in the market from 6s. to

7s. 6d. per lb. Watering is an operation to which Mr. Sweet pays unremitting attention. Each house is watered four times during the season, as a rule, and at each application sufficient is given to thoroughly saturate the whole of the soil down to the drainage. The first watering is usually given immediately the Vines are pruned, this being to compensate for the long season during which the roots have of necessity been kept in a dry state in order to keep the fruit in good condition, as water applied to the roots of Vines after the fruit is ripe impairs the flavour of the produce, as well as its keeping properties. The second dose is given when the leaves become expanded, the third when the fruit is fairly set, and the fourth when stoning is completed. If very dry weather prevail, and another watering become necessary, it is supplied just before colouring commences. Manure water is at all times liberally supplied, even when the Vines are first started, and to this may be attributed in a great measure the unusual strength which the shoots attain, even in the dull sunless season. Indeed, to the effectual mode of watering is attributed in no small degree the almost marvellous results obtained in this establishment. All Grapes sent from here are of the best quality, although the Vines are very heavily cropped. Indeed, as a Grape grower, Mr. Sweet is excelled by few who grow entirely for market. Young Vines planted in autumn make canes the following summer as thick as a good-sized walking-stick, and the following season are allowed to carry a moderate crop of fruit. Alicante grafted on stocks of Muscat of Alexandria give great satisfaction in this establishment, where they yearly bear large and perfect crops of fruit. Whenever a house of Vines is found to be on the decline as regards bearing qualities, young Vines are speedily substituted for the old ones; half measures, such as trying to recruit the old canes, being, in the case of market growers, simply a waste of time and money.

Another very important Grape-growing establishment, notice of which must not be omitted, on account of the large Grape Vine to be found in it, is that of Mr. Kay, of Finchley. Grapes are grown here to a considerable extent and "the large Vine at Finchley," as it is called, is well known to all Grape growers. This Vine has produced remarkable crops of fruit every year since it became established. The house—a span-roofed one—in which it is growing has on several occasions been lengthened in order to afford additional room; it is now 90 ft. long and 18 ft. wide—a space entirely occupied by this Vine, which enters the house on one side about the middle. Its main stem, which measures at the bottom nearly 2 ft. in circumference, crosses the roof, and from this issue ten strong rods, half of which are trained each way horizontally. On this Vine, when visited in August, 1877, there were nearly 500 well-formed bunches of Grapes, each of which averaged about 2 lb. in weight. The border, like that of other Vineries here, is outside; it is about 15 ft. wide and 4 ft. deep, made on a hard, clayey bottom, on which is placed a quantity of brick rubbish, &c., for drainage; the soil consists of ordinary loam and brick rubbish, such as can be obtained in any place where building is going on. No manure was mixed with the soil before the Vine was planted, but the border receives an annual top-dressing in autumn to protect the roots during winter and spring, and from this the roots, no doubt, derive considerable nourishment. As regards pruning, the spur system is that adopted; the wood is thoroughly ripened every year by exposing it freely to air and light, and, could the house and border be further enlarged, this Vine would, doubtless,

become one of the very finest in the Kingdom. Its fruit is usually fit for use in September, after that from earlier houses is finished. Amongst late Grapes here a house of Lady Downes Seedling and Black Alicante deserves notice. It is a low, lean-to structure of considerable length, and has a northern aspect—a position in which the fruit is found to ripen equally well as that in a more sunny situation, and, being later in ripening, it can be preserved in good condition for a long time, provided the atmosphere of the house is kept dry and airy. Most of the Vines consist of from four to five canes each, old ones being removed as often as it is considered expedient to replace them with young ones. As soon as the Grapes are cut, the houses are thrown open, and the Vines exposed to the full influence of the weather. This has the effect of ripening the wood thoroughly and of clearing the foliage of insects should any exist. Most of the canes in the late houses are allowed to carry from twelve to fifteen bunches each, all of which they ripen perfectly.



Vinery, Peach, and Plant House combined.

Mr. Elliot, of Fulham, to whom allusion has already been made, grows mid-season and late Grapes only. His Vines are all planted in outside borders, which are heavily mulched with manure throughout the year. When I visited this establishment, the Vines had only been planted a few years, and were, consequently, not thoroughly established. It is remarkable how much more quickly market gardeners fill their houses with Vines than private growers. Canes planted here filled the houses in two years, and the third season they carried excellent crops. Vines of the Black Alicante variety planted in a house with a northern aspect made remarkable growth the first season and thoroughly ripened it, and they will in all probability succeed equally well as if they were in a house with a southern or eastern aspect, which most people contend is indispensable to the production of well-coloured Grapes. Black Hamburgh, Gros Colman, and Black Alicante are the only varieties grown in this establishment. They are not (as before stated) forced, but are allowed to advance naturally, fire-heat being applied only to dispel damp or prevent the tender shoots from receiving severe checks by sudden changes in the weather should they occur. The varieties

come into use in the order named, and, as fruit of the best quality only is produced, it accordingly realises high prices. The Hamburghs are usually fit for market by August, and fetch from 4s. to 5s. per lb. Gros Colman, in September, October, and November, realises from 6s. to 9s. per lb.; and Alicantes, in mid-winter, from 6s. 6d. to 7s. 6d., according to the demand there may be for them. Whilst the Vines are at rest, scarlet Pelargoniums, Mustard and Cress, Tarragon, &c., are grown under them.

Mr. Yeldham, of Fulham, grows Grapes to a large extent, his object being quantity rather than quality, in order to meet the demand of a second-class trade; his houses are, therefore, not wholly devoted to Grape growing. Of these he has altogether twenty, ranging in length from 100 ft. to 250 ft. and proportionately wide. The Vine borders here, as elsewhere, are all outside, well drained, heavily manured during the winter, and copiously watered during summer. Most of the Vines, which have been planted for a number of years, are trained on the rod and spur system, several canes being allowed to each Vine. One large house is, however, pruned on the long rod system, which consists in training up young canes every year and removing them as soon as they have borne a crop of fruit. By this method, a crop of large bunches of Grapes is almost a certainty; but, Mr. Yeldham remarks, they do not always colour so well as those produced on older canes. Black Hamburgh is the only kind grown here, and this variety serves both for early and late crops. The earliest houses usually ripen their fruit late in May and early in June, and others are brought on in succession. As very large bunches and berries are not sought after, the bunches are thinned much less severely than would otherwise be the case, and a greater number of bunches are left on the Vines. Grapes of this description, owing to their cheapness, find a readier sale than those which are brought to the highest state of perfection. The principal late Vinery is a span-roofed one, 220 ft. long, and, before the railway ran through the grounds, taking away part of it, this house was nearly double that length. A pathway runs inside along the front, and at the back is a border from 12 ft. to 15 ft. wide, planted with Camellias. Another very profitable kind of house—of which the accompanying illustration will give some idea—is one which, at some time must have been a shed. A glass front and roof have, however, been fixed in it, the spars, rafters, and boarded back remaining unaltered. The upright posts which support the ends of the cross rafters are about 12 ft. apart, and at the foot of each of those next the glass front is planted a Vine, the main shoots of which are trained horizontally along the cross rafters, and from this main stem issue at every 2 ft. or so other rods, which are trained in an upright position towards the roof. By this means the Vines obstruct very little light from other subjects grown in the house, whilst they themselves have abundance of light and sun from every side. In the centre of the house, and between these Vines are planted standard Peach trees, which are from 12 ft. to 15 ft. high, and as much through, and during June and July their branches bend under the weight of good-flavoured and well-coloured fruit, which they bear. The trees are never pruned, but in every respect liberally treated, and they amply repay the trouble bestowed upon them. Peaches and Nectarines during June and July realise from 10s. to 15s. per dozen, according to size and quality. The house in question is 215 ft. in length, and 28 ft. in width; the back boarded wall is covered with Gloire de Dijon Roses, one plant alone furnishing 150 ft. of the space. A number of Camellias and several large specimens of Mock Orange

are also growing in this house, the latter yearly bearing immense quantities of sweet-scented white blossoms, which are eagerly bought up by bouquet makers. All available space on the floor and between the trees is occupied by Rhubarb, and in February and March there is such a quantity to be gathered that one wonders how it could all be disposed of so early in the year. A more profitable or interesting house than this, it would be difficult to meet with; indeed, so simple is it in the way of arrangement, and so inexpensive as regards labour, that it is surprising that other fruit growers have not adopted similar ones. From this house alone Mr. Yeldham cut in one year 7300 bunches of well-ripened Grapes.

Grape growers for market differ from private growers in their methods of culture in several particulars. For instance, they do not stop the shoots at one or two joints above the bunch, but allow three, four, and, if there be room in the house, as many as five and six joints. By this means they get plenty of foliage, and they can crop the Vines much heavier than they otherwise could do. Syringing the foliage is not so much practised by market growers as by private cultivators, as they are of opinion that heat and too much moisture together render the foliage thin and poor, thus injuring the crop. Thinning, which is completed at one operation, is always performed as soon as the berries are well formed. This practice saves labour and the results are found to be as good as when the bunches are gone over twice or thrice. Abundance of air, all the light possible, plenty of water, and a growing temperature are the chief points observed in the general cultivation of the Vine in market gardens.

C. W. S.

THE FRUIT GARDEN.

FRUIT PROSPECTS.

SELDOM have these been brighter than at the present moment (March 25). The two principal elements in the matter are the numbers and the lateness of the buds. With a winter of almost unexampled length and severity, running through March with about 10° of frost and a cold north-east wind, most of the fruit buds are now as soundly asleep as they are in most seasons in the middle of February; it follows, that unless April proves far more genial and exciting than usual, the probability is strong in favour of the fruit buds being so late as to escape the killing severities of late frosts. The destructive power of these arises more from the tenderness of the prematurely-developed buds than from the actual amount of the frost itself; hence, every week longer that fruit buds remain closed the prospect of the fruit season brightens. The buds, as I have said, are also abnormally numerous as well as late. Several years' partial rest, and, upon the whole, a favourable autumn for the maturation of the wood last season, have enabled the trees to recruit their strength and mature a plentiful crop of fruit buds. The fear has been expressed in certain quarters that the severe frosts of the past winter may have injured the fruit buds, but this does not seem to have been the case to any extent. The winter has been one of great steadiness of character as well as severe cold. There has been far fewer fluctuations of temperature and of sun and shade than usual. It is the sudden changes rather than any mere intensity of cold that proves most injurious to fruit buds. With leaden skies and almost continuous frosts for three months at a stretch, the buds wintered well. Hence their present safety and the prospect of a plentiful season. It is well, however, to make security doubly sure by adopting some of the more simple means of protection. After trying everything, from glass, slate, and wooden copings of different widths, and all kinds of textile fabrics, portable and fixed, it may seem somewhat humiliating to have to come back to the conclusion that the simplest and most primitive means of protection are by far the best. These consist of the thrusting of a few Fern

fronds, Asparagus tops, and a few loose handfuls of straw, or spraye boughs, among and over the flowering shoots. The protection is thus placed close to the flowers. This method of protection creates no currents or draughts. Such protecting screens, when formed of Spruce or other boughs, have also this great advantage; the screen removes itself piecemeal, a leaf at a time, as it were, and by the time the more genial weather enables the embryo fruits to take care of themselves, nothing of such screens is left but a few bare skeleton boughs, which obstruct but little light and scarcely injure the trees. With the ordinary run of seasons such as we have had of late years, it is hardly safe to remove these wholly till the end of May. But so much and so gradually do such protectors remove themselves, that it is possible to disbud the trees before finally removing the whole of the self-reduced protectors. These simple methods may be adopted alone, or in conjunction with glass or other copings. Last season, while Peaches, Nectarines, and Apricots were wholly destroyed, protected with glass copings faced with canvas or screened with netting, the trees screened with boughs under the copings carried a full crop, and the trees themselves also came through the ordeal of the last trying spring unharmed. Similar simple means of protection are equally effective for cordon Plums, Pears, and Apples, and they are easily applied to such trees. A few bushy boughs laid over or on, have never failed to ensure a crop of Plums on cordons, and saved a capital crop of Apples on cordons last season, while all others, with few exceptions, were cut off by the severe weather of the last spring. In most large gardens such protecting material costs nothing, and it is as efficient as it is simple and cheap.

D. T. FISH.

POT VINES.

"A. D." has done good service in directing attention to the evil practice of placing pot Vines out-of-doors, a plan generally adopted in nurseries. Pot Vines grown for forcing purposes (I am assured by the most extensive growers in London and elsewhere, that most of their stock is sold for that purpose) cannot have too long and too favourable a season under glass in this country, in order to fit them for starting readily in November and December. I find, and all with whom I have talked on the subject find, that when they grow their own pot Vines, and get them ripe and pruned by August, or, at the latest, by September, they can get them to start with comparative ease in November, and get their crops in early without too much pressure at the end; but nursery-grown Vines that had been put out-of-doors about midsummer "to ripen" as it is termed, never can be got to start readily, simply because they are not ripe enough to prune early, and therefore, they get no rest between pruning and starting. We grow our own pot Vines when we can afford the room, but quite as often we have had to buy them, and I think we have had considerable quantities of pot Vines from eight or ten of the most noted growers in the country. In most cases I ordered the plants about midsummer, with the special object of getting good and early ripened canes, but I never yet could get Vines that were as ripe as they should be to their extremities or without green leaves in September, and even in October, and I have always had to place them under glass to finish them. There is not so much objection to placing the plants out-of-doors, provided the roots are protected from wet and frost after the canes are quite ripe, the buds brown and hard, and the laterals also brown and ripe up to the first pinching, but before that they should be under a glass roof.

I am speaking of Vines grown from eyes the same year of course. For such plants there is no more than time for them to complete their growth and ripen their wood perfectly by August or a little later, and the sooner after that they are pruned and rested previous to starting the better. That this can be done quite well there can be no doubt. From eyes put in early in March I have had canes 7 ft. high quite ripe, nearly to the extremities of the laterals, and pruned by the beginning of September, thus giving them two or three months complete rest before forcing. These Vines were as thick as one's thumb, and some of them that were sent to an Edinburgh nurseryman were exhibited in their pruned state at the International Show in Edinburgh in September of the same year. A little later in the season a nurseryman who sells about 1000 Vines annually, would readily have taken the whole houseful at a figure much above the usual wholesale price, if we would have parted with them. The plants were never out of the house all the summer and they started early and easily into growth.

J. S. W.

Peach Trees and Galvanised Wire.—I would recommend Mr. J. Wood (p. 249) to give his galvanised wires two or three coats of paint. I cannot quite assure him that this will save his trees from being damaged, but, so far as I have tried it, I am inclined to believe it will. Another good plan is to give the matting a couple or three twists between the wire and the shoot in tying to prevent the two from coming in contact. Notwithstanding the recorded experience to the contrary, it is a fact that in many gardens galvanised wire kills the shoots of Peach trees wherever it touches them, exactly as Mr. Wood describes. Both indoors and out it does, or rather did do so, with us in almost every case where the young shoots simply touched the wires. The evil was unknown with us till we used the galvanised wire, while against our painted iron wire and wood trellises I have never noticed a damaged shoot, all other conditions being equal. I do not know whether it was to prevent the wires injuring the young shoots of the Peaches or not, but I noticed that in most of the examples of trained Peach trees at the Paris Exhibition the shoots were not tied to the galvanised wires but to straight laths placed between them and the wires, and in cases where the laths were absent the Willow withes used for tying were twisted so as to prevent contact.—J. S. W.

—Galvanised wire seems to differ in character; in some cases, if the branch only touches the wire, the latter destroys its bark, while in others no damage is done. If Mr. Wood (p. 249) will give his wires two coats of white lead and turpentine mixed pretty thickly, allowing the first coat to get thoroughly dry before applying the second, he will experience no further injury.—JAMES SMITH, *Waterdale*.

Dieu Donne Apple.—This has been on sale in Covent Garden all the season, and has met with great approval, not only on account of its beauty, but its pleasant quality. Despite a certain amount of what might be called wooliness, it is, to my taste, one of the best Apples I ever met with. On applying to Mr. Rivers for plants he told me that he had never heard of such an Apple, and that it was not mentioned in any of the French or English pomological dictionaries. I shall be glad to know whether it is in cultivation in this country, and if so where plants are to be had. In Covent Garden I was told a very remarkable but rather romantic story about the name of this Apple, which comes from the south of France, and is said to be in cultivation near Bordeaux, Bayonne, and elsewhere.—H. B.

Protecting Vine Borders.—I should not again have alluded to this subject were it not an important one. Does not Mr. Simpson see the difference between the extremes of putting on the protecting material whilst the weather is still so warm as to endanger the buds starting prematurely, and not applying it until so late that a considerable portion of the heat had been lost? Does he think that anyone having a knowledge of Grape growing would fall into the former mistake? But suppose they did. Would it have the effect of causing the Vines to break prematurely? Nothing of the kind, if the tops were kept as cool as they should be, and the treatment had been of a character to keep the old foliage on in a healthy condition for its wotted time. Did any one ever know or hear of Vines thus breaking through the border being covered with protecting material? If not, raising objections to it is useless, so far as practice is concerned. Covering in borders at the proper time has been, and is still being further carried out in hundreds of places throughout the country, and the results have been found equally satisfactory, and in many cases very much more so, than when the soil is allowed to lose its summer heat and is afterwards artificially warmed.—T. BAINES.

NOTES FROM KEW.

Hardy Plants.—Of these one of the finest which we have seen for a long time is the charming new Himalayan *Primula rosea*, to which reference was made last week (p. 246). It is now in bloom on the rockery at Kew, and quite lights up the surroundings with its bright rosy blossoms, which are borne in considerable profusion. Some of the Kew specimens have the flower stems but little developed, forming a cushion-like mass of flowers and foliage together, but this peculiarity in no way detracts from their beauty. Another charming acquisition is the new *Chionodoxa Lucifolia*, which was found and introduced by Mr. Maw from Smyrna. In point of size and habit it at once reminds one of the two-leaved Squill (*Scilla bifolia*), but the flowers are fewer and much larger, being 1 in. across, with rather narrow segments of a bright sky-blue colour, gradually fading to an almost white centre. It is doing well in the open border, in company with Squills, Daffodils, and other spring flowering bulbs. In the Narcissus collection, the exquisite little Single-leaved Daffodil (*Narcissus monocoryllus*) is furnished with a goodly supply of blossoms. Nothing in the way of hardy plants could well surpass the chaste beauty of this Daffodil. It is a native of Algeria, and in

order to grow it successfully it requires heat and not much moisture immediately after the flowering season is over; hence we see it here as well as at other places grown in a handlight or frame. The *Megasea* section of *Saxifraga* is now very showy, enlivening the rockeries and borders considerably. Besides the well known kinds, *S. ligulata* and *crassifolia* with their numerous forms, there is the somewhat rare *S. Stracheyi*, discovered some years ago by General Strachey, at high elevations on the Himalayas. In habit and foliage it resembles the ordinary kinds, but the panicles of blossoms are lighter in colour. *S. ornata* apparently possesses no character to distinguish it from *S. ligulata*, except in being a shade lighter in colour. The *Retusa Saxifraga* (*S. retusa*) is a neat trailing plant, much resembling *S. oppositifolia*, but differing from it in the flowers being smaller, and collected in dense terminal clusters, which, before they expand, look very much like red berries. The blossoms are of a violet purple tint. It is found plentifully in several mountainous parts of Central Europe, especially on the Maritime Alps. Remarkable more for curious structure than bright colouring is the pigmy Umbellifer *Hacquetia* (*Dondia*) *Epipactis*, another inhabitant of the Alps. Its flowers, which are yellow, are collected into a small head, surrounded by a row of yellowish bracts. Similar with regard to attractiveness is the rare Oriental *Coptis* (*C. orientalis*), a Japanese plant belonging to the Crowfoot family, with tassel-like heads of white flowers rising 3 in. high, and resembling the North American Gold Thread (*C. trifoliata*).

Greenhouse Plants.—The handsome Australian *Acacias* form the leading feature in the Temperate House, the most conspicuous being, in addition to those previously mentioned, the pointed-leaved variety of *A. longifolia* named *micronata*. This forms a large shrub with linear, pointed leaves, and literally covered with dense racemes of lemon-coloured blossoms. The whorled *Acacia* (*A. verticillata*), a kind with remarkably short-pointed, needle-like foliage, is very elegant, even in the shape of small pot specimens, and Drummond's *Acacia* (*A. Drummondii*) is now bearing long racemes of bright yellow flowers. The *Rhododendrons* continue still in beauty, and added to their number is *R. niveum*, a kind having close and rather small heads of purple flowers, but very distinct on account of the white under surface of the leaves. *R. fulgens* is in great beauty; it has deep crimson blossoms, smaller in size and more spreading than those of the others; like the foregoing, it is a native of Sikkim Himalaya. The Rose-flowered *Camellia* (*C. roseiflora*), a miniature pink-flowered species, from China, forms quite a contrast to the larger kinds on account of its size, but it is none the less showy. Its foliage is much the same as that of the ordinary kind, but in habit it is more lax. Also *abysynica*, with yellow flowers, and *A. picatilis*, with scarlet and green flowers, are very showy amongst succulents in the Western Octagon, but they are too cumbersome for general culture. *Hemanthus natalensis*, a Cape bulbous plant of considerable beauty, though of rigid habit, is at present finely in flower. It is about 15 in. high, and has a stout flower stem copiously spotted with red at the base, and terminated by a large dense head of flowers with scarlet orange-tipped stamens surrounded by livid purple scales. *Imantophyllum miniatum* is a very desirable *Amaryllid*, with large orange-scarlet flowers rising from amidst deep green bold foliage. As an instance of the elasticity of its constitution, it is flowering profusely in a cool greenhouse, and also in the Palm house. *I. Aitoni*, also a native of Natal, and in the Palm house, is very inferior in point of beauty, as its flowers are much smaller and of a duller colour.

Stove Plants.—A very desirable variety of that most lovely stove plant *Plumbago rosea* is now finely in flower in the T range under the name of *superba*; the colour of its blossoms is of a much deeper shade than that of the original, from which it may be distinguished at a glance. *Geissomeria nitida* is a very showy *Acanthad* of dwarf, erect habit, with large, leathery, deep green leaves, and a terminal cluster of bright scarlet, narrow, tubular blossoms 1 in. long, with hairy stamens protruding from their mouths. Another ornamental plant of the same family is *Apelandra pulcherrima*, a native of Columbia. It is of rather loose habit, about 2 ft. high; it has oval leaves, and the branches are terminated by heads of tubular flowers 2 in. long, of an orange-scarlet colour. *Begonia prismatocarpa* is an elegant little gem only a few inches high, and profusely studded with deep orange-coloured flowers mottled and pencilled with red; it forms a striking plant both as regards size and colour.

Orchids.—*Lælia cinnabarina*, a fine Brazilian epiphyte, is well worthy of a place in every collection on account of the deep orange colour of its blossoms, a colour seldom seen amongst Orchids. It is a very variable kind with regard to size, some forms bearing flowers fully twice the size of others. *Cologneya flaccida* is remarkable for the profusion of its long pendent racemes of creamy-white blossoms, which have a golden crest on the lip, rendering them very showy,

though their perfume is anything but agreeable. *Ornithidium coecineum*, though deep red flowered, can hardly be recommended, scarce as that colour is amongst Orchids, as the flowers are small and borne on short stalks, though produced plentifully enough. It inhabits one or two of the West Indian Islands. The well-known *Lycaste Skinneri* with its large blossoms of many shades of colour, varying from a deep purple to white, is now becoming attractive, and, owing to its succeeding under cool treatment and being so easily managed, it should be in every collection. *Epidendrum erectum* has for a long time assumed a gay appearance; its numerous dense clusters of dark violet flowers terminate leafy stems from 6 ft. to 10 ft. long. It is also a cool house kind and a native of New Granada.—W.

NOTES OF THE WEEK.

In the Botanic Garden, Regent's Park, a specimen of the very interesting Winter's Bark bears many of its singular flowers in the economic house, and a large plant of the Giant *Illicium antiquorum* bears many flowers in the conservatory. It is interesting to notice how freely the tropical *Philodendron giganteum* grows planted out in the conservatory.

Iris reticulata.—One of the few flowers that now brave the easterly breeze is this beautiful Iris, which is at present finely in flower in Mr. Wilson's wild garden near Weybridge.

The Spring-flowering Hellebores.—These beautiful flowers are no longer likely to be left hidden under their often ample leaves in their native hills or here and there in botanic gardens. We have lately seen a very interesting gathering from Glasnevin, and Mr. Barr and other growers are making good collections of them.

The Seeding Azaleas, crosses between *A. amena* and some of the garden hybrids, recently distributed by Mr. B. S. Williams, have this season fully proved their excellence for winter flowering by the length of time during which they remain in bloom. We saw one of these not yet sent out, named Princess Margaret, that had been in flower continuously from October up to the middle of March; the colour is reddish-crimson, and the flowers are good in texture, well-formed, flat, and almost circular.—P. G.

Atacata pinnatifida.—This is now in flower in the Pine-apple Nursery. It is a most singular-looking plant, with pinnate, long-stalked foliage, and a flower spike nearly 5 ft. in height, the flowers and accompanying threads being pendent. They are chocolate-coloured, and the stem is yellowish-green and mottled. It requires a hot-house.—J. B.

American Camellias.—We understand that the new and beautiful seedling Camellias, belonging to Mr. C. M. Hovey, which were exhibited at the meeting of the Royal Horticultural Society on Tuesday last, and so justly appreciated as to have first-class certificates awarded them, will be offered for sale at Stevens' early in April.

Hyacinth with Fifteen Flower Spikes.—At a meeting of the Royal Botanic Society, held the other day in Regent's Park, a remarkable and very pretty Hyacinth, with fifteen spikes of flowers from one bulb, grown by Mr. Asplin, and a painting of the same by Miss B. Maguire, were exhibited.

"L'Art des Jardins."—We have received what is, without doubt, the most important book published for some time on landscape gardening, that of M. Ed. André, of Paris. Before we have had time to look at the book with a view to anything like a sufficient notice of it, we must, nevertheless, now announce its appearance, and say that it is extremely well produced, large, full of many practical details explaining the formation of gardens, as well as general views of design in all styles, and abundantly illustrated. Apart from these things, it will have interest for many of our readers as being the work of one who, while a thorough horticulturist of large experience and great knowledge, is also a botanist, a scholar, and one who has travelled much in many lands, and seen as much as most men of the vegetation of the world, as illustrated in gardens as well as in Nature. Such varied experience and knowledge have been brought to bear on a subject so interesting to many, and in a future number we hope to show in how far the results are instructive from the point of view of English landscape gardening.

Primula rosea.—This pretty new hardy Primrose is now in flower at Glasnevin, and Mr. Gumbleton writes to us as follows concerning this and other plants at present in bloom at Belgrave:—"I have now two very interesting and rare, if not new, Primulas in bloom in my greenhouse, raised from seed from Cashmere received and distributed by Mr. H. J. Elwes, which turn out to be *P. rosea* of Royle and a fine form, with considerably larger pipe, of *P. farinosa*, with powdered foliage and a good-sized head of bloom; these are also now in flower at Kew. Another very interesting and, I believe,

exceedingly scarce little Irid is also coming into flower in my greenhouse, sent to me last autumn by Mr. Whittaker, of Ferriby Brook, near Derby, as *Aristea pusilla*, but which turns out to be in reality another variety of the same family (*A. cyanea*), figured so far back as vol. xiii. of the "Botanical Magazine," t. 458, and also in vol. i. of Andrews' "Botanist's Repository," t. 10. It seems very free blooming, my small plant showing already either four or five heads of flower. I have now in great beauty, in my greenhouse, a number of lovely light-coloured hybrids of the beautiful *Primula Sieboldi*, raised by Lemoine and Dean, of Ealing; some of them are most beautiful. My large bush of *Pterotyrax hespidum*, which I thought would never bloom, has flower in nearly every shoot of the young growth. The rose-coloured *Apogoneton distachyon*, from Machetea, is also in bloom in my pond for the first time."

New Christmas Rose.—Messrs. Barr & Sugden exhibited the other day at South Kensington a Christmas Rose named *Helleborus orientalis*, var. Dr. Moore, a seedling raised at Glasnevin. Its flowers which are rose tinted, are very beautiful. Dr. Moore describes it as a very ornamental border plant, and being of the taller kind of the later-flowering Christmas Rose, it would make a good pot plant for the decoration of cool houses in winter. It is more ornamental than any of the Berlin seedlings which we have flowered in this country.

SOCIETIES AND EXHIBITIONS:

ROYAL HORTICULTURAL SOCIETY.

MARCH 25.

NOTWITHSTANDING a heavy snowfall, which lasted all day, there was on this occasion an excellent show, which was visited in the course of the morning by H. M. the King of the Belgians. The chief attractions were some fine groups of plants from Mr. Wills, a bank of *Hyacinths* from Messrs. Veitch & Sons, and *Cyclamens* from the leading growers.

First-class Certificates.—These were awarded as follows:—

Hyacinth King of the Reds (Veitch & Sons).—A variety with short, compact flower spikes, thickly beset with double dark red blossoms.

Hyacinth Leviathan (Veitch & Sons).—A sort having noble spikes of blossoms, which individually are unusually large, well formed, and of a lively flesh colour.

Camellia Mrs. Hovey (Hovey & Co.).—A kind with flowers of medium size, exquisitely formed, and of a delicate pink colour.

Camellia C. M. Hovey (Hovey & Co.).—A red-flowered kind, excellent in form, and well worth attention.

Azalea Duke of Connaught (Williams).—A dwarf-habited kind, having purplish-crimson, hose-in-hose blossoms.

Galanthus nivalis Melvillei (D. Melville).—A robust growing kind with large, well-shaped flowers of snowy whiteness.

Hyacinth The Sultan (Veitch & Sons).—A kind with very stout symmetrical trusses of blackish-blue flowers.

Hyacinth Duchess of Connaught (Veitch & Sons).—A wonderfully showy kind, with bold trusses of pale blue flowers.

Hyacinth Salmon King (Veitch & Sons).—A valuable variety, with salmon-coloured blossoms.

Rose Madame Alexander Bernaix (Turner).—A hybrid Tea Rose, having large, finely-shaped, globular blossoms of a bright pink colour; evidently a good addition to the class of Roses to which it belongs.

Cyclamen Queen of the Belgians (H. B. Smith).—A dwarf-habited kind with pure white, broad-petalled flowers; excellent for market purposes.

Primula rosea (T. S. Ware).—This charming addition to hardy Primroses was fully described in THE GARDEN last week [p. 246].

Amaryliss Mrs. Baker (Veitch & Sons).—One of the best of Amarylisses; on one spike it bore four fully-developed blossoms, with broad, round, recurved petals of a rich crimson colour.

Medals.—Mr. John Wills was awarded a gold medal for a collection of Orchids and other plants, and Mr. Bull received a similar award for a collection of new and rare plants. For a group of flowering and fine-foliated plants, Mr. B. S. Williams received a silver-gilt Banksian medal, as did also Messrs. Osborn & Co. for a miscellaneous collection of plants, and Messrs. Paul & Sons, Cheshunt, for a group of pot Roses. Mr. R. Dean had a silver Banksian for a collection of plants of *Primula denticulata*, and similar awards were made to Messrs. Paul & Sons, Waltham Cross, for cut blooms of Camellias; to Messrs Charles Lee & Sons, Hammer-smith, for a group of miscellaneous plants; and to Mr. Aldous, South Kensington, for dinner-table decorations. To Messrs. Veitch & Sons, Chelsea, was awarded a gold medal for a collection of Hyacinths; and Messrs. Osborn & Sons had a silver gilt Banksian for Hyacinths. Mr.

Moorman, gardener to Messrs. Christy, Kingston, was awarded a gold medal for Hyacinths, Tulips, &c.

Groups of Plants.—Mr. John Wills, exhibited a group of plants such as are rarely seen in this season. Amongst them we remarked well-grown examples of *Paulinia thalictrifolia*, *Rodea macrophylla*, bearing large trusses of snowy-white blossoms, *Bertolonias*, *Droseras* under glass cases, fine-leaved Palms, Ferns, New *Dracenas*, *Yuccas*, well-flowered *Gloxinias*, *Amarylises*, *Anthuriums*, fine-leaved *Crotons*, and *Caladiums*. The same exhibitor also showed an attractive group of finely-flowered Indian *Azaleas*, set in an irregular bed of Maiden-hair Ferns, Grasses, *Cyclamens*, blue *Cinerarias*, &c. In the centre of the two collections described was a tasteful arrangement suitable for a sideboard, the background of which consisted of Ferns, finely-flowered examples of *Dendrobium Wardianum* D. noble, and *Odontoglossum Alexandra*, with long, graceful flower spikes; mixed with these were dwarf Palms and Lady's-tippers. The bed was composed of the close-growing *Selaginella apoda*, in which were plunged groups of Tea Rose blooms, fine spikes of flowers of *Dendrobium Wardianum*, and flowering plants of *Gloxinias*. Mr. Wills also showed the grand *Sèvres* vase, won at the Versailles Exhibition, also medals from the Paris Exhibition. Mr. William Ball sent a large and attractive group of new and rare plants, amongst which were finely-flowered *Orchids*, *Anthuriums*, the double white *Epacris* (*E. onosmodora* fl.-pl. nivalis), and fine-leaved *Cycads*. Amongst *Orchids* was a group of well-flowered plants of *Odontoglossum cirrhosum*, also well-flowered examples of the pretty *Odontoglossum Phalaenopsis*, the scarlet *Ada aurantiaca*, *Oncidium sarcoodes*, *Masdevallias*, small plants of *Lycaste Skinneria* (bearing ten magnificent ivory-white flowers), the chocolate and green *Odontoglossum triumphans*, *Dendrobium Wardianum*, and fine *Cattleyas*. Mr. B. S. Williams furnished a group of plants, consisting of fine-leaved *Dracenas*, *Amarylises*, *Sarracenia*, *Drummondii* in bloom, and other insectivorous plants; also *Belonia Maria Regine* and *Cyclamens*. Mr. Roberts, Gunnersbury Park, showed a charming group of *Orchids*, *Amarylises*, and Ferns. Among the *Orchids* was a plant of *Odontoglossum Andersonianum* with two spikes, each bearing nearly forty blossoms; also well-flowered examples of *Phalaenopsis Schilleriana*, and fine varieties of *Odontoglossum Alexandra*. Mr. Aldous, South Kensington, showed a good group of flowering and fine-foliated plants, but too much crowded to be seen to advantage. Messrs. Paul & Son, Chesham, contributed a group of Roses excellent for the season. Among others were *La France*, John Stuart Mill, Captain Christy, Duke of Elinburgh, Madame Lacharme, Jean Pernet, Charles Lefebvre, and Princess Mary of Cambridge. Messrs. Osborn & Sons, Fulham, and Messrs. Lee & Sons, Hammersmith, also showed attractive groups of flowering and fine-foliated plants, including *Limnophyllums*, *Rhododendrons*, *Azaleas*, *Clematises*, *Cyclamens*, and *Dentizias*.

Hyacinths.—Of these Messrs. Veitch & Son exhibited a collection remarkable alike for quantity and quality, upwards of 300 plants, perfect as regards colour, being edged. Their spikes were strong and symmetrical, and the individual flowers possessed of great substance. Over eighty new sorts were included in this collection. Messrs. Osborn & Sons, Fulham, also furnished a collection of well-grown Hyacinths, and a good group likewise came from Messrs. Carter & Co.; these were backed up by finely-flowered plants of *Dicentra spectabilis*, and edged with clumps of Lily of the Valley. Mr. Moorman, gardener to the Misses Christy, Coombe Wood, Kingston, showed a well-grown collection of Tulips, Hyacinths, and Crocuses. Messrs. Cubush & Sons, Highgate, also sent a well-grown collection of Tulips and Hyacinths, and fine panfuls of Lily of the Valley.

Cyclamens.—Of these hundreds of finely-grown plants were shown by Mr. Edmonds, of Hayes, and Mr. B. Smith, Ealing. The latter had also a large group of *Cyclamens* with pure white flowers, many of them deliciously scented.

Hardy Flowers.—Mr. Dean, of Ealing, had an interesting bank of hardy flowers, consisting of finely-grown, well-flowered examples of *Primula denticulata* and its varieties; various *Primroses*; Siberian *Squills*; *Viola Profusion*, a new white-flowered kind excellent for spring garlands; *Polyanthuses* and similar plants; all of which served to show how attractive a cool greenhouse may be made in winter by means of such hardy plants. Mr. Parker, Tooting, also exhibited a collection of hardy plants, consisting of finely-flowered examples of *Megaseas*, *Hepatica triloba* corulea, and cut blossoms of *Aponogon distachyon*; also flowering plants of the gold-leaved *Aubretia deltoidea*; the sweet-scented *Iris denticulata*, so well adapted to pot culture; the earliest of the *Daffodils*. *Narcissus* *Hyacin*, *Bulbocornea*, and *Silene aequilifolia*. Messrs. Barr & Sealing showed a plant of *Heliboea orientalis*, var. Dr. Moore, fully noticed elsewhere. Mr. Ware, of Tottenham, showed various hardy *Primulas*, consisting of *P. denticulata*, an interesting variety named *P. d. purpurea*; a variety of *P. denticulata* from Cashmere having compact heads of purple blossoms and gold-powdered leaves; also the pretty dwarf *Primula rosea*, a new species now in flower for the first time simultaneously in various collections.

Floral Decorations.—Messrs. Green & Co., Victoria Street, sent two very attractive bouquets, composed chiefly of *Camellias*, *Orchids*, Rose buds, *Stephanotis*, and *Eucharis*. A very attractive dinner-table arrangement was shown by Mr. Aldous. It consisted of three light and elegant gold-coloured stands, named the *Isabella* stand, with trumpet glasses filled lightly with Lily of the Valley, white Lilies, *Orchids*, *Spiraeas*, and double white *Primulas*. There were also several dishes of fruit and some coat bouquets, the whole making a charming table.

Miscellaneous Subjects.—Messrs. Wm. Paul & Son exhibited twenty boxes of cut blossoms of *Camellias*, which were greatly admired on

account of their variety of colour, size, and substance. Mr. Parr, of Harrow Weald Park, showed new Abutions of a meritorious description. Messrs. Veitch & Sons showed plants of a new *Dracena*, from the South Sea Islands, named D. Princess Marguerite. Mr. Green, gardener to Sir G. Macleay, contributed cut blossoms of *Prostranthra lasianthus* and *Salvia elegans*. Mr. Cannell showed some remarkably fine blossoms of zonal *Pelargoniums* on a bed of the dwarf green *Nertera depressa*. Messrs. Veitch & Sons showed a finely-grown specimen of *Rhododendron Veitchii*, a greenhouse species from the Khasia Hills, bearing large, showy, white flowers, with frimbriated edges. Mr. B. Williams showed *Azalea Duke of Connaught*, a dwarf kind, with small, brilliant rose-crimson flowers, and excellent for forcing. Mr. Charles Turner, Slough, exhibited a basketful of the Tree *Carnation A. Alegatiere*, which is considered to be one of the finest scarlet-flowered kinds for winter blooming. Messrs. Cubush & Son, Highgate, showed stands of *Camellias*, among which were *Etisia*, scarlet; *Queen of Beauties*, peach colour; *Mathottiana*, crimson; *Cap of Beauty*, white; the striped *Lavania Muzzy*, its rose-coloured variety, and other fine kinds. Mr. Parker, Tooting, sent a flowering plant of *Dendrobium superbum ginkantum*, having large and attractive purple and violet blossoms. Mr. Stevens, The Gardens, Trentham, showed a fine variety of *Odontoglossum Andersonianum*, one spike of which bore eighteen large, finely-spotted blossoms.

Fruit.—Mr. L. Killick, Langley, Maidstone, showed a collection of Apples remarkable for their good quality, all the specimens being large, sound, and highly-coloured. Among the best were *Summer Quoining*, *Bedfordshire Foundling*, *Beauty of Kent*, *Winter Nonsuch*, *Countess of Denbigh*, *King of the Pippins*, *Northern Greening*, and *Tower of Glamis*.

ROYAL BOTANIC SOCIETY.

MARCH 26.

THE plants which formed the chief features of this show were those shown at South Kensington on the previous day, and of which mention has just been made.

First-class Certificates were awarded to Messrs. Veitch & Sons for *Amarylises* Mrs. Baker, *Epidendrum Wallisi*, *Davallia Mariesi*, *Asplenium Neo-caledonicum*, and to the following Hyacinths, viz., Duke of Connaught, single dark blue; Royal Blue, white centre; Duchess of Connaught, single light blue; Duke of Norfolk, semi-double, dark blue; King of Bala, fine rose-red; Salmon King, flesh colour; Lord Derby single, red striped; and MacMahon, single yellow.

Mr. James, Isleworth, received certificates for *Cinerarias* Master Harold, rose crimson, shaded purple, with a white disc; Mrs. Bland, white, edged with violet; and Earl Beaconsfield, dark maroon-purple.

Mr. H. B. Smith, Ealing Dean Nursery, had a certificate for *Cyclamen Duke of Connaught*.

Mr. Little, Hillingdon, received a certificate for *Cyclamen The Gem*, a charming kind with broad, round, white petals shaded with rose.

Certificates were likewise awarded to Mr. Williams, of Holloway, for *Pandaphyllum humile*, *Croton albicans*, *C. Williamsi*, *Calyptronia Swartzii*, and *Gleichenia dictyophora* *logyniata*.

Also to Mr. Bull, of Chelsea, for *Davidsonia pruriens*, *Staphylea colchica*, *Epacris onosmodora*, *Adiantum bellum*, *Lustrea aristata variegata*, and *Macrozamia McKenziei*.

Messrs. Low, of Clapton, received certificates for *Cymbidium Lowii*, and Mr. Bolter, South Kensington, for *Agave macrantha*, and *A. Shawii*.

Messrs. Veitch and Sons, Chelsea, showed a fine bank of Hyacinths, among which were eighty new kinds, the best of which were—*Carolina Wiseman*, pink and white; Duke of Connaught, blackish purple; *Trocadero*, rose pink; King of the Reds, rose red; *Pottgiezer*, lavender; *Leviathan*, flesh colour; and Duchess of Connaught, light blue. Amongst the older kinds were: *Whites—La Grandesse*, Queen of the Netherlands, *Mont Blanc*, *Madame Van de Hoop*, *Reds—Prince Albert Victor*, *Vuurbaak*, *Van Schiller*, *Princess Louise*, *Dark Blues—Baroness Van Turen*, *King of the Blues*, *General Livestock*, *Marie*, *Light Blues—Lothair*, *Lord Derby*, *John Bright*, *Czar Peter*.

Messrs. Osborn, Cubush, and Carter & Co., had also fine displays of Hyacinths and other plants. Mr. George Paul, who was the only exhibitor of Roses, had a large group, in which were fine blossoms of *Comtesse de Serenye*, *John Keynes*, *La France*, *Annie Alexief*, *John Bright*, *Captain Christy*, and *Madame Lacharme*.

Mr. Williams showed a good collection of plants, conspicuous amongst which were *Belonia Maria Regine* (in flower), *Rhododendron Denisonii*, new hybrid *Azaleas* (obtained by crossing *A. amosa* with large-flowered kinds), giant *Cyclamens*, forms of *Primula denticulata*, *Cycads*, Palms, fine-leaved *Dracenas*, *Sarracenia flava*, *Gleichenias*, *Casuarina ericoides*, and *Adiantum Farleyense*.

Mr. Bull, of Chelsea, had a fine display of *Orchids* and fine-leaved plants.

Azaleas were not so good as we have seen them in former years at spring shows. The best half-dozen came from Mr. Ratty, gardener to H. Thornton Esq., Sydenham, who had well-flowered examples of the purple *Reine des Roses*, *Duc de Nassau*, the robust scarlet-striped *Madame Ambroise Verschaffelt*, and the semi-double *Constant Van Keersbloom*. Mr. James, Redles, Isleworth, had also well-grown plants, among which were *Criterion*, *Iveryana*, and the brilliant kind called *La Superb*.

Messrs. Cubush & Son showed basketfuls of plants consisting of *Epacris*, which made a good display. Among the best kinds were *odorata alba*, white magnifica, pink; *Waltoni*, flesh colour; *Newton*,

white; *hyacinthiflora candidissima*, white; Fireball, red; Model, rosy-pink; a very dwarf and pretty white kind named The Bride, and a variety named Lady Alice Peel, rose, tipped with white.

Mr. Douglas, Loxford Hall, Ilford, exhibited some fine plants of *Narcissi*, amongst which the best were glorious, Grand Monarque, Queen of the Netherlands, and Grand Soleil d'Or. The same exhibitor had also some plants of *Deutzia gracilis*, 3 ft. high and as much through, complete masses of snowy-white blossoms. Mr. Douglas likewise showed the best Tulips consisting of Vermilion Brilliant, Proserpine, and Keizer Kroon.

Mr. Boller, South Kensington, sent a large collection of miniature Cacti.

Mrs. Messelbrook, St. John's Wood, exhibited flowering plants of the richly-coloured *Amaryllis formisana*.

A list of prizes awarded on this occasion will be found in our advertising columns.

LONDON INTERNATIONAL HORTICULTURAL EXHIBITION FOR 1880.

It is a source of deep regret to me that my colleagues so quietly shelved the idea of holding the above show next year at a meeting which was held on the 18th. I think when we had such an excellent opportunity of carrying out the arrangements for the exhibition, backed as we were by Her Majesty's Commissioners for 1851, who would, I feel sure, have lent us their willing aid if we had asked them, it should have been done, and I feel sure its failure will be deeply regretted by horticulturists generally. The fact is simply this, a few of us have arrogated to ourselves the position of thinking for the general body of horticulturists in the country, instead of, as I have urged the committee time after time, calling a general meeting by advertisement. This is what ought to have been done months ago, when, I feel sure, horticulturists, as a body, would not have considered any crisis at the present time an obstacle to carrying out the show successfully fourteen months hence. It is not reasonable to suppose that Her Majesty's Commissioners would ever listen to any overtures for the site at any future time unless they came from a more spirited body of men than those who have brought the present negotiations to such a miserable failure.

I still hope that Her Majesty's Commissioners will themselves carry out the arrangements for this most important exhibition, and if they do not feel disposed to do so on their own responsibility, there are plenty of others (not strictly horticulturists) who would speedily guarantee £15,000 or £20,000; and if there be no other means of attaining this end, and Her Majesty's Commissioners will let the gardens, arcades, and Albert Hall for the purposes of an international show in 1880; I have no doubt I can find gentlemen willing enough to furnish the required amount for the purpose. I, therefore, appeal to the great body of horticulturists to support me in this undertaking, in order to prove to the few that the spirit of emulation is still potent. I trust that a large meeting will shortly be held, and that the general and predominant feeling will be to push the proposed exhibition to a successful issue with might and energy. What can be more conducive to the welfare of millions of our fellow countrymen than the cultivation of their minds, brought about under the influence of Horticultural teaching? Take the labourer, for instance; how much pleasure does he not derive from the cultivation of his little cottage or allotment garden for his day's toil in the fields? Having refreshed himself with his humble meal, he goes forth into his garden, and occupies the remaining daylight in what proves to him a source of pleasant recreation, beneficial alike to himself and his family, instead of spending his hours in idleness. If there be in his neighbourhood a village horticultural society, his energies are stimulated to their fullest extent by the hope of gaining some of the prizes to be competed for. I therefore maintain that the example set by a great International Horticultural Show held in London would be productive of immense benefit to the whole of the country by infusing a spirit of emulation into the breast of every cottager in the country. I cannot help thinking that if the exhibition in question was carried out, that Her Majesty's Commissioners of the Exhibition of 1851 would be conferring a large amount of benefit on countless thousands of Her Majesty's subjects, and be fulfilling the ideas intended when they were appointed the guardians of the money entrusted to their care, and which was derived from millions of the humble workers in the great hive of industry in Her Majesty's dominions; and I cannot conceive any greater advantage Her Majesty's Commissioners could confer, nor anything likely to be more conducive to the general good of the country than their encouraging an exhibition of this kind.

16, Onslow Crescent.

JOHN WILLS.

Scottish Seed and Nursery Trade Association.—At the annual general meeting of this Association, as will be seen by an advertisement in another column, attention was directed to the importance of arbitration in all cases of dispute between buyers and sellers of seeds and plants, through the expense and delay of legal proceedings, as well as unsatisfactory litigation. For carrying out this resolution, it was resolved to place the services of the committee at the disposal of all disputants upon the payment of one guinea towards the funds of the Association, besides all expenses incurred in connection with each case brought forward. All further information on this most important arrangement may be had upon application to the secretary. In connection with that may

be considered the primary object of the Association, viz., the prevention and exposure of attempts to vend adulterated seeds, it was agreed to offer to seedsmen's and nurserymen's assistants a prize of £5 for an essay on the best means of discovering the various forms of adulteration and detecting the same seeds, stating particulars of all foreign substances found in any questionable samples offered for sale. Competitors for this prize must lodge their essays with Mr. David Hunter, secretary of the Association, on or before November 1 next, for adjudication of the judges to be appointed by the committee. All parties desiring to join the Association may remit the annual subscription of one guinea to the secretary.

ANSWERS TO CORRESPONDENTS.

Lilium auratum.—How am I to obtain blooming plants of this in the shortest time from seed?—INQUIRER. [I should sow in a deep seed pan, place it in a greenhouse and leave it for three years, then pot the bulbs; when sown out of doors, we have found that the bulbs do not flower for six or seven years.—G. F. WILSON, *Heatherbank, Weybridge.*]

Has Lead Wire any Injurious Effect on Roses?—Both last year and this I observed, in pruning my Roses, that the branch to which the label was attached was, in many cases, dead; the labels are zinc, tied loosely round the branch with lead wire. In some instances the branch was quite healthy.—R. F. T., *Belvast*. [I have not observed any specially bad effect from the use of lead wire. It is best to attach the label to the stem of the tree (taking care to loosen the ties each year, as a small branch is almost sure to be cut through by the wind-waving of the wire and label).—GEO. PAUL.]

Strawberry House.—I am about to have a Strawberry house erected, but before doing so, I should be glad of some information on the subject.—C. J. H. [For Strawberry forcing there is nothing better than an ordinary forcing pit, with a stage in the form of a stair. By this arrangement, every plant is near the light and easy of access by simply drawing off the lights. The heating power should be sufficient to ensure a minimum temperature of 60° on the coldest nights.—W. W. H.]

Books.—*W. F. G.*—Parnell's "Grasses of Britain" might, perhaps, be obtained of some second-hand bookseller. The Lawson Company publish some works on Grasses which may answer your purpose.

Stephanotis floribunda.—*A. A. Thorn.*—It is not unusual for this to bear seed pods.

Caster-Oil Plant.—*R. P.*—There is a short article on the cultivation of the above, with other statistics, in "Tropical Agriculture," by P. L. Simmonds; published by Spon, Charing Cross.—J. W.

Names of Plants.—*S. L. B.*—It is very difficult to name *Hyciaths* from single bells, many of them being very much alike. We think the one you send is *Lord Wellington*, but we are by no means sure. *Hyciaths* might be propagated successfully in many parts of England, a principal requirement being a deep sandy soil; but the process is tedious, and would not pay commercially, unless carried out on a very large scale.—*W. F. E. D.*—1. *Oncidium cryptocarpis*; rather a rare kind. 2. *Cypripedium Schlimgi*. *G. T.*—We cannot undertake the naming of *Camellias*, which should be sent to some specialist; No. 1 seems to be *anemoneflora*.

Fruit Rooms.—A hint or two about fitting up a fruit room would be of service to me. What I have got to work on is a two-stall stable long disused, and I thought of leaving the ramp, and carrying narrow shelves (of splints with spaces between them) round each stall, so as to avoid having any quantity of fruit out of sight. I should further darken the windows with shutters. Beyond this I am ignorant.—*TYRO*. [Your stable will make a very good fruit room if the aspect is north or east; if open to the south or west, the air of the room would be too dry, although, to a certain extent, this could be neutralised by provision being made for keeping all ventilators closely shut, such a condition is not desirable, as a slight circulation of air is, at all times and in all weathers, short of actual frost, necessary; of course, a damp situation would be equally bad as south or west, only this is easily remedied by means of drains. The proposed shutters would be needed; and, occasionally, when necessary to dry the room, the windows might be opened; but a couple of ventilators in the roof would be much preferable. Your plan for shelving cannot be improved, but if you can add drawers for some of the latest kinds of Apples and Pears, they would keep longer without shrivelling. Understand, these are only for the longest keepers; the early and mid-season fruits would rot in such drawers.—*W. H.*]

Neglected Orchids.—I am anxious to inquire if much is known of *Vanda alpina*. I have a plant in a 5-in. pot with forty-nine expanded flowers; as it is a very small flowering variety, perhaps it is dismissed by most growers as insignificant. I have rather a fancy for many of the rejected ones; it can hardly imagine, however, that the plant in question is a *Vanda* at all; the deep recess or bag behind the lip reminding one more of a *Saccolabium*. Another plant seldom seen is *Meiracium* a plant, with lovely, Soporitis-like, violet blossoms, which I should have thought would have won for it a place amongst the upper ten.—*R.*

The Southampton Horticultural Society.—This Society, which in future is to be called the Royal Southampton Horticultural Society, offers, we observe, prizes for the coming year amounting in the aggregate to £350.

HIS MAJESTY the King of the Belgians honoured Mr. Wills' establishment with a visit on Tuesday last, after inspecting the Royal Horticultural Society's Show at South Kensington.

No. 285.]

SATURDAY, APRIL 5, 1879.

Vol. XV.

"This is an art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—Shakespeare.

INDOOR FRUIT GROWING FOR MARKET.

PEACHES AND NECTARINES.—The chief supply of early Peaches and Nectarines comes from France and Spain. These are succeeded by fruit from the Channel Islands; and mid-season and late Peaches and Nectarines are supplied to a large extent from the south and other parts of England, chiefly from private sources. There are, however, several Peach growers for market near London. In a small place at Barnet both Peaches and Nectarines are well grown, though in a somewhat primitive manner. The houses in which they are grown are of the half-span-roofed kind with a pathway through the centre. In the earliest house the trees grow in an inside border of very limited dimensions, but they, nevertheless, appear to thrive remarkably well, and yield enormous crops of fruit. The trees in the other houses occupy an outside border. During the autumn, after the fruit has been gathered, the lights are removed from the roof, and the trees are exposed to the full influence of the weather, which has the effect of cleaning and hardening the wood, as well as allowing the border to become thoroughly soaked with rain-water. The first house is started early in January, and the Peaches are usually ripe early in June; the second house is started a month or six weeks later, to succeed the first, and the trees in the third house are allowed to come on without much forcing, and to ripen their fruit just before the early outdoor Peaches come in. In the second early Peach house I noticed a tree that covered 300 square ft. of trellis, then bearing over thirty-five dozen fruit. Other trees in the same house, though not quite so large, were proportionately fruitful. In such old trees as these are I never remember seeing so much young and fruitful wood. Indeed, it is surprising how they have borne such heavy crops for years in succession, and still retain their health and vigour. The borders, both inside and outside, are covered with rotten manure when the trees are started into growth, and this not only nourishes the roots, but also keeps the soil moist, thus obviating the necessity of frequent waterings.

A good plan seldom adopted in the growth of indoor Peaches and Nectarines is well carried out in a market garden not far from the one just alluded to. The proprietor calls it the ridge-and-furrow system, but it is, in fact, the cordon plan, which is largely practised in France. The trees, twenty-five in number, are planted, 3 ft. apart, on the south side of a half-span-roofed house; their main stems are trained upwards like Vines 2½ ft. from the glass; each stem is furnished on both sides with healthy spurs, from which are emitted from five to eight shoots. When pruning, three or four of the best-ripened fruit-bearing growths are selected, and the rest are cut away, leaving in all cases a few eyes to furnish young shoots during the ensuing summer for supplying the next year's crop. The shoots which are left for fruit-bearing are not trained out horizontally, as is generally done in the case of Vines; on the contrary, they are trained towards the glass, and thus form, as it were, a ridge and furrow. The kinds of Peaches grown are Royal George, Noblesse, Grosse Mignonne, Late Admirable, Barrington, and other sorts, which

naturally succeed each other, thereby prolonging the season during which fruit can be had in good condition. The Nectarines consist of such kinds as Violette Hâtive, Balgowan, and other popular sorts, all of which succeed on this system remarkably well. From this house in one year were gathered nearly 1500 large and excellent fruits, which found a ready sale at good prices in the market. The house is started in January, and the trees are brought on gradually; gathering commences towards the end of July, and an abundant supply of fruit is obtained until the beginning of August. The trees had only been planted three years, and so satisfactory had been the results, that it was proposed to do away with trees trained in other ways and replace them with cordons—for in seasons when complaints were being made about Peaches falling off, these trees carried a crop that would have surprised many of our best growers, three, four, and five large fruits being observable on single shoots. In order to still further utilise space, it was proposed to lower the main stems of the trees and train the shoots in a more upright direction towards the glass. The trees had only covered one side of the roof, but it was intended to train them down the other side, which, when I saw them, for the time being, was covered with Tomatoes, on which there was a heavy crop—a result attained by constant stopping of the young growths and by the removal of superfluous foliage, so as to throw the vigour of the plants into the fruit. Peach trees, after being cleared of fruit, are well watered and the leaves kept well syringed, all air and sunshine possible being admitted in order to thoroughly mature the wood and buds. As soon as the leaves have fallen, all shoots which have borne fruit are cut back, and the young growths which have been selected for bearing next year are laid in their places.

Several very large Peach trees may be found in Mr. Kay's garden at Finchley. They are of great age, but under the culture to which they are subjected, they yearly bear heavy crops. The chief conditions are—keeping the wood well thinned by timely disbudding and pruning, thoroughly ripening that which remains, and during the time the trees are in fruit supplying their roots with abundance of water. The fruit is ripe in July and August, and better fruit than that grown here is seldom seen in Covent Garden. Even in seasons when there is elsewhere a comparative scarcity of Peaches these old trees carry heavy crops. Too rapid forcing, insufficient ventilation, and dryness at the roots are the chief causes why people lose their crops of Peaches and Nectarines. In order to convert all available space to profitable account during the time when Peach trees are at rest, plants, such as Solanums, Cytisus, Fuchsias, and Pelargoniums, are grown in the houses. Cuttings of these are struck during the summer, potted, and placed out-of-doors or in cold frames until unfavourable weather sets in, when they are removed to the house, in which are moveable stair-like stages provided for them near the glass.

Mr. Yeldham, of Fulham, has also two houses devoted to Peach trees, which are trained on wire trellises under the roof. Barrington, Violette Hâtive, and Royal George are the kinds grown, the latter succeeding remarkably well here, ripe fruit having frequently been gathered from the trees weighing from 8 oz. to 10 oz. each. Standard Peach trees, to which allusion has already been made, are also successfully grown under glass.

Peaches and Nectarines out-of-doors are not very largely cultivated near London, and where they are the trees are, of course, nailed to walls. There is no reason, however, why Peaches and Nectarines should not in favourable

localities be planted and grown as standards. We should not, of course, expect them to produce fruit of the best quality, but in favourable seasons good crops of second and third-rate fruit might be looked for with tolerable certainty. In a small garden at Cheshunt, I saw a standard Peach tree from 15 ft. to 20 ft. high, and as much through, and at the time of my visit its branches were literally loaded with fair-sized, well-coloured fruit; the proprietor informed me that this tree had that year yielded at least 1000 sound and usable Peaches, and their flavour, though, of course, not equal to that of those grown on walls, was refreshing and good. This tree had been planted about eight years, having been previously grown in a pot. After planting, no attention had been paid to it beyond now and then, when it was found necessary, thinning out a few over-crowded or unfruitful branches. In previous years I was informed that the fruits produced were much finer than in the season when I saw it, owing to their having been thinned out a little whilst in a green state. The variety was the Early York, but other kinds of a less hardy, but much choicer, character, were also growing in the same garden in the form of dwarf pyramids, and were all liberally bearing large, and in every way excellent, crops.

PINE-APPLES.—There are now only about two places near London where Pine-apples are grown for market, and in these the fruit is ripened late in summer, when foreign Pines are not so abundant. Pine-apples formerly occupied a prominent position in Mr. Wilmot's establishment at Isleworth, but now only a few hundreds are fruited there annually, and these chiefly for supplying private customers. To grow Pine-apples for market does not pay—not because they cannot be produced as cheaply now as ever they have been, but the profits required by London retail fruiterers are so great, that consumers will not buy English-grown Pines so long as they can get imported ones at a much lower price. During the summer months there is a fair demand for home-grown Queens, which realise at that season high prices; but it is just possible that foreign growers will in time make provision for furnishing Pines at that season. Queens and Black Jamaicas are the only kinds now grown in market gardens, these being of much finer flavour than any others which ripen during summer,—the time when the bulk of English market Pines are ready for use. Where Pines are still cultivated for market, they are grown in pits plunged in leaves and rough manure, none of the more complicated methods of supplying bottom-heat by means of hot-water having found their way into market Pineries. Hot-water pipes are, however, used to supply top-heat, but the whole system is what most people would call a rough-and-ready way of growing Pines. Nevertheless, excellent fruit has been and is still produced under such conditions.

C. W. S.

Shortia galacifolia.—This highly interesting and rarest of North American plants is now in blossom in one of the greenhouses in the Botanic Garden, Cambridge, Mass., where it is an object of great attraction. It is a sweet little plant, not showy by any means, but a welcome garden Alpine. It is about 4 in. high, with Galax-like leaves, both as regards form and brownly colour, and pure white bell-flowers, borne singly on stems 3 in. high. In 1778 Michaux discovered a *Pyrola*-like plant in the mountains of North Carolina, and secured the specimen, which was in fruit, but not in flower for his herbarium. Beyond that specimen, not another vestige of the plant, dead or alive, was known to exist till last year (1878), when it was re-discovered growing on a hillside in North Carolina, and specimens were then sent to the garden here. Long before its re-discovery it was earnestly but unsuccessfully hunted for by Dr. Asa Gray and others; and even now so much importance is attached to the long-sought mountaineer, that

a special company of botanists from here are to visit it in its native wilds as soon as its flowers open in the spring. It was named by Dr. Gray in compliment to Dr. Short, an eminent botanist of Kentucky. A nearly allied species, namely, *Shortia uniflora* (Schizocodon uniflora) was discovered not long ago in Japan.—WILLIAM FALCONER, in "Country Gentleman."

THE FLOWER GARDEN.

PLANTS FOR THE SUB-TROPICAL GARDEN.

Nothing forms a more distinctive feature in the embellishment of gardens, or helps to break up the uniformly flat surfaces of beds so much as fine-foliaged plants, one or other of the most striking of which placed in the centre of a circle gives it a finish quite unattainable in any other way. Not only are they very effective used in this manner, but they are equally so for grouping in masses or standing as isolated specimens on lawns, for the latter of which purposes some of them are specially adapted. One of the most serviceable for this kind of work is *Chamerops Fortunei*, a Palm that is not only exceedingly ornamental after it has attained a fair size, but one which has the additional merit of being quite hardy in localities that are in any way favoured. Even in the most northern districts of England it will stand any ordinary winter if slightly protected by putting a few leaves or dry litter around the stem and collar, for, with these vital parts a little sheltered, the foliage may with safety be left to take care of itself. To test its enduring powers I have had one left in a very exposed situation without the slightest cover, and although, as is well known, the winter has been one of unusual severity, the plant at the present moment looks as fresh and well as it did in the autumn. The way in which this fine-looking Palm is best managed is to turn it out early in the spring, after being properly prepared for the change, as then it has time to make its growth and become firmly established before bad weather sets in. To give it a good start, which is half the battle, a large hole should be dug previous to planting, and if the natural soil be bad, the space should be filled with sandy loam and leaf mould, but in all cases when the latter is used, it is a very important matter that it be thoroughly decomposed and entirely free from sticks or anything of that kind likely to engender fungus, a parasite which, when it attacks the roots of plants, soon throws them out of health and frequently destroys them altogether. There are many other Palms that are valuable for plunging out in conspicuous places during the summer, the most noticeable of which are *Areca sapida*, *A. Baueri*, *Latania borbonica*, *Phoenix reclinata*, *Chamerops australis*, and *Phoenix dactylifera*, but none of these will bear sharp frost, and should, therefore, be moved under cover by the end of October.

Another noble-looking plant for planting as a specimen is *Aralia Sieboldii*, which has leaves considerably larger than those of the Fig, and, being of a pleasing shade of green, and singularly bright and polished, they have a very striking appearance, which is heightened in the spring when the plant comes into flower, and begins to bear seed. Seeds, obtained and sown now in heat will make very useful-sized plants by the autumn, that will be of great service for the embellishment of rooms, halls, corridors, &c., as, owing to the thick, leathery texture of its magnificent foliage, this *Aralia* will stand in places where there is not much light better than any other plant with which I am acquainted. There is a variegated variety which is even more ornamental, owing to the leaves being margined with a rich, creamy-white band, but this colouring appears to have made it more tender than the normal form, as it does not bear the cold so well. It is, however, a most valuable plant for decorative purposes indoors, especially during the winter, when plants of an ornamental character are not over plentiful. Unfortunately, it cannot be raised from seed, and is not very free in affording cuttings, which makes it scarce and dear as yet, but it is one of those good plants that are quite worth the first outlay, as it is sure to give satisfaction. For forming bold masses in the sub-tropical garden, *A. papyrifera* should not be forgotten, as, grown in deep, rich soil, it is a remarkably stately-looking object that will endure a good deal of cold and wind without suffering or getting its leaves torn and injured in the way so common with many others that

attain a large size. One great advantage in growing this variety for decorative purposes out-of-doors is that it may either be protected in the beds or position in which it stands, or be dug up and wintered in any dark shed or cellar, where, although it loses its foliage, the stems break and start away again in the spring, when they are little, if any, the worse for the treatment. Any one having plants of this kind and wishing to increase them, will find that the most ready way of doing so is to cut off a few of the largest and most fleshy roots, which, divided into about 2-in. pieces and buried in sharp sandy soil and then placed in a brisk bottom-heat, will soon break and form useful plants by the end of May.

Hedychium Gardnerianum, although generally treated as a stove plant, is sufficiently hardy to stand out in ordinary winters if planted in light, well-drained soil and protected with half-rotten leaves or any thing of that kind over the crown. Fine as it is grown under glass, it is much more so turned out with plenty of root-run, and, when so accommodated, is a valuable plant for forming bold clumps, or for massing in the foreground of shrubs, the uniformity of which it helps to break up and define. By dividing and starting any now, they will get well advanced by June, and may then be planted with safety.

Another capital plant for the same kind of work, or for grouping near lakes or ponds, is *Arundo Donax*, the tall reeds of which, towering some 10 ft. or 12 ft. high, and clothed with gracefully drooping foliage, have a very striking effect. It is to be feared that the hard winter we have had will have injured plants of this where not protected, but a slight covering over the crowns is always sufficient to insure their safety. Any division or planting should be carried out in April, just as the young shoots are pushing through the ground, as then one can easily see where to thrust in the spade, and the injured parts caused by so doing quickly heal over when growth fairly commences. To associate with the last named, *Arundinaria falcata* and *Bambusa Metake* should not be forgotten, as they are both plants, even in their young stage, that are exceedingly ornamental. *A. falcata* is the most elegant-habited of the two, but *B. Metake* has the merit of being more hardy, and appears quite unaffected by the present sharp winter. Both of these do best in a deep, loose loam, where they can find plenty of moisture below, and, if they can get this and shelter, their growth is most rapid. *Phormium tenax*, too, delights in a similar soil and situation, and, from the flag-like appearance of its leaves, is well adapted for planting near water, where, if slightly protected around the base during the winter, it soon becomes established, and forms an object of great interest and beauty. The striped or variegated kinds are remarkably handsome, but at present all of these are too valuable to be risked outdoors, except during the summer months, when, if plunged in suitable positions in the sub-tropical garden, they produce a striking effect. Plants of the normal type may be bought at a very low price, and they likewise come readily from seeds, which, sown now in heat, germinate quickly and make useful-sized plants at about a year old.

Grevillea robusta, the leaves of which, in general appearance, are equal to any Fern, is one of the most elegant habited plants it is possible to have, alike valuable either for in or out-door decorative purposes, and it is specially adapted for arranging in the centres of beds, or interspersing among others of lower growth, to relieve their flatness. This, like the majority of those plants now to be alluded to, admits of increase by seeds; but these being somewhat hard, germinate with more freedom if soaked for a few hours in a little tepid water before being sown. Besides being so useful for the purposes already specified, young seedling *Grevilleas* having healthy foliage down to the pot, form exceedingly graceful ornaments for the dinner-table, and when of larger size, come in admirably for assisting in the embellishment of greenhouses and conservatories during the winter. Next in point of gracefulness to the last-named, is *Acacia lophantha*, a plant of singular beauty; if seeds are sown now, and when up nursed on in gentle heat, they will be quite large and strong enough for turning out by the first week in June. *Ricinus*, or Castor Oil plants, are all very noble looking subjects, but the most remarkable among them is *R. Gibsoni*, which has leaves almost as rich and highly coloured as the well-known *Iresine*, now so much used for

bedding. I think the most telling group of fine foliaged plants I ever saw, was one formed of the above-named *Ricinus* and *Melanthus* major, the contrast between the two—the one so light and silvery looking, and the other of such a fine dark bronzy hue—being such as to arrest attention at once, and produce a most pleasing effect. As the *Ricinus* are up within a few days after being sown, and the plants grow so rapidly afterwards, the seeds should not be put in till the end of April, otherwise the plants either get too large before it is safe to venture them out, or if confined to small pots become stunted, and lose their lower leaves, which greatly detracts from their beauty. On the other hand, the *Melanthus* major cannot well be sown too soon, as it is not only slow in germinating, but takes some time in attaining much size, even when nursed on in heat.

Other rich combinations of colour may be made by associating *Melanthus* with *Coleus*, using the first-named as a centre, or better still, with *Chilian Beet*, the brilliant tints of which are then made to appear all the brighter. The effect of this latter is considerably heightened by being planted on raised mounds or banks, so as to get a full play of sun and light behind the leaves, which are then translucent and show off to the greatest advantage. The best way to manage *Chilian Beet* is to sow seed singly in small pots in a little warmth about the middle of April, as then the plants can be transferred to their summer quarters without check. Solanums, such as *Warszewiczii*, *giganteum*, or other large-leaved kinds are grand decorative subjects that may be raised quickly and cheaply in any ordinary hot bed frame, and, if planted in rich soil form quite a feature in the subtropical garden during the summer. *S. marginatum*, although not so large or strong growing, has handsome silvery foliage, and blends well with *Ricinus Gibsoni*. *Cannas* are quite indispensable, the contour and form of their noble foliage being such as to commend them for extensive use in all arrangements where fine-leaved plants are required. The growth of these, like most others already alluded to, is so rapid that seed sown at once will afford plants late in the spring. The strongest and best, however, are such as are obtained by saving the old roots in the autumn, and dividing the same now, which, if started in rotten leaves in a frame, lift well when required for use.

Echeveria metallica is another useful plant, either for forming groups among other succulents, or in raised mounds with the ground carpeted with *Sedum lydium* or other prostrate plant of the same or a similar nature, that the harmony between them may add the connecting link, as it were, and render the whole complete. The fine massive form of this *Echeveria* likewise makes it valuable for dot plants in carpet bedding, where, with *E. retusa*, it generally takes a very prominent part. It propagates readily during the summer by means of leaves or pieces of the flowering stems put in full sun in the open ground, and it may be raised from seed sown on the surface of finely-sifted soil, kept moist, and covered with a bell-glass till the plants make their appearance.

Acanthus latifolius has also large, glossy foliage, and comes quickly from seed. Plants of it in shrubbery or herbaceous borders, when in full flower, are fine-looking ornaments that are sure to command attention; but, being of strong growth, they require plenty of room.

Another plant of remarkably bold type and pleasing green foliage is *Wigandia caracasana*, a really fine subject for the sub-tropical garden, which, if sown now in strong heat, nursed, and potted on, will be quite soon enough for the purpose. As most of the above require rich soil, the positions they are to occupy should now be prepared by being trenched and heavily manured, so as to be in readiness for planting before the busy season arrives.

S. D.

Summer Treatment of Old Cyclamen Bulbs.—In reference to the inquiry made by "Star" (p. 221), I may state that my reason for recommending the bulbs to be planted out was in order to simplify the watering, as I know that many fall simply through the roots being injured by giving too much water whilst the bulbs are starting into growth. Placing them in the open ground obviates this danger, and by the time they are ready to pot, fresh fibres and new leaves are formed, when water may be given without injury.

"Star" cannot, therefore, do better than follow a system which has produced such good results. I used to treat old bulbs much in the manner described by "Star," shifting them out of 4-in. into 6-in. pots, and gently shaking out some of the soil when quite dry from them in 6-in. pots, giving fresh drainage and working in a little fresh soil, replacing them in the same sized pot, as I found by thus treating them, and administering weak manure water when in full growth, they succeeded much better than when transferred to larger pots. They were looked through the first week in July, but the bulbs were placed for a time in a frame, and were carefully watered until they had struck root, for I found that when exposed to heavy rains, many of the young fibres perished. I found, too, that they grew faster when thus sheltered, and, forming their flower buds sooner, they came more quickly into bloom. I may add, that I have always considered that two-year-old bulbs give more satisfaction than those which have exceeded that age.—J. CORNHILL.

NYPHÆA OBSCURA v. N. ROSEA.

SUCH is the heading of an article that appeared in the January number of the "Botanical Index" (an excellent periodical issued by Mr. L. B. Case, of Richmond, Indiana, U.S.A.), in which is reproduced and commented upon a short note that I communicated to THE GARDEN last summer on *Nymphæa odorata* minor. There is evidently some misapprehension as regards the information which I wished to convey, or the writer of the comment cannot be justified in suggesting the re-naming an already aptly-named and well-known plant. In order to set the matter in a clear light, and to obviate the necessity of referring to back numbers of THE GARDEN, allow me to quote both the note and the comment in question. Here is what I wrote:—"*Nymphæa odorata* minor is the variety named by Pursh as *rosea*, to which name it may justly lay claim, as the plant which we noticed in flower lately in the Kew collection confirmed. It is much smaller in every part than the type; it has the same dark purple colour on the under side of the leaf and also the attenuated lobes. The blossoms, which are about 2 in. across, have the outer petals deeply tinged with rose, a colour which contrasts finely with the fringe of golden stamens. Though much inferior to the recently introduced rose-coloured variety of *N. alba*, it is, nevertheless, a distinct and valuable kind." Concerning this, the writer in the "Botanical Index" says:—"According to Sir Joseph Paxton, there is already a variety of *Nymphæa* with pink flowers, from the East Indies that received the name of '*rosea*' in 1803, which, of course, must take precedence, and if the rose-coloured variety of *N. odorata* is distinct enough to warrant a separation another name must be chosen. With this idea in view we selected the name '*obscura*,' as the most suitable one for the variety; at least, it expresses the fact as well as any name can do. All plant collectors are aware of the disposition of plants with white flowers to produce bluish, brownish, yellow, flesh-coloured, or pink and rose-coloured flowers, while plants with coloured flowers are continually producing albinos, or, at least, flowers many shades lighter than the usual colour, the generally accepted types. The practice of multiplying species or even varieties upon such obscure and indefinite points may be excused in a commercial point of view, but it certainly is a source of great confusion in botanical nomenclature." The last sentence would lead one to infer that I am the offending party in calling the plant in question by the name of minor, but I can assure the writer, on no less reliable an authority than the "Flora of North America," by Torrey and Gray, that this variety was named minor many years ago by Sims, an old English garden botanist, and it has been known under that name by both botanists and cultivators ever since. I mentioned the name "*rosea*" given to it by Pursh merely in allusion to its synonymy, and also to show that that learned botanist observed the permanent character in the rosy tint of the flowers running parallel with its smaller size, even in a wild state; but as the name of minor is very applicable, and has priority of date, it must, as in the usual way, take precedence. The *Nymphæa rosea* alluded to by Paxton is merely a variety of either *N. Lotus* or *N. rubra*, and it would matter not if there were many more rose-coloured varieties, so long as their varietal name was preceded by the specific, and therefore I fail to see how in the present instance it can lead to "confused nomenclature." By forcing such an apparently meaningless name as "*obscura*" upon an old and well-known plant, without giving us any authority for it whatever, is, I consider, a breach of the laws which regulate botanical nomenclature.

W.

Golden-flowered Millfoil (*Achillea aurea*).—I am surprised that this old-fashioned herbaceous plant is not oftener met with in cultivation than it is. The peculiar shade of yellow which the flowers

exhibit is uncommon, and the habit being good and the whole plant very hardy and easily grown, it would be found suitable for many situations in the flower garden. I have seen it thrive remarkably well planted in the front line of a shrubbery, where it formed when in bloom a very distinct and somewhat striking object.—J. C. BYFLEET.

Primula denticulata.—It would be difficult to find any hardy plant that is more deserving of greenhouse or frame culture than this *Primula*. It is now beautifully in bloom, presenting a hue of colour that no other spring flower possesses. Starting with denticulata, then follow varieties of *Primula amœna*, and later on come *P. japonica*, *sikkimensis*, *Parryi*, &c., whilst the smaller sorts are intermediate, filling up during the time when these large kinds are in bloom. *P. denticulata* and its ally *purpurea* may be raised freely from seed; a few pods from a plant of the latter last spring yielded me about 600 seedlings, the majority of which are just now coming into bloom. These will be planted out in a cool place in the open ground when the bloom is over, and there they will remain until November, when they will be lifted into 5-in. pots for blooming. During that time they make about three crowns. When planted out again the second year they produce from six to twelve crowns and make grand plants for 8½-in. and 9½-in. pots, producing large trusses of bloom. It is well, then, before again planting out, to divide the plants into several pieces in proportion to the number of crowns, as these will again produce large heads the next spring. The culture is simple, and so treated the crowns come stronger than when they are kept in pots all the summer. I find that this *Primula* roots deeply; indeed, it is difficult to wrench it out of the ground in the autumn with a strong fork. Before potting, it is necessary to shorten the roots somewhat, but no harm will be the result of this operation. As an outdoor decorative plant it blooms almost too early, except in very sheltered nooks, and these are generally too warm in the summer. Merely for a supply of cut flowers a number of plants may be planted thickly in a frame with advantage.—A. D.

The Scarlet Clematis (*Clematis coccinea*).—When the "*Revue Horticole*" appeared with a coloured plate of a Clematis with bright scarlet flowers, and called it *Clematis Pitcheri*, we were not a little astonished. We had long cultivated Pitcher's Clematis (*Clematis Pitcheri*), not only for its intrinsic beauty—for as a climber, with its large dark purple solitary flowers, it is a really handsome plant—but because it bore the name of one of the most courteous and genial of men of the "Old School" (Dr. Zinnas Pitcher, until his death the leading physician of Detroit) that it was ever our good fortune to meet. To have a plant thus endeared to us set aside by a new comer bearing the name, however brilliant it might be, was far from pleasant. The correctness of the "*Revue Horticole*'s" plate was called in question by the "*Gardener's Chronicle*," whereupon came a correspondent of THE GARDEN, with a statement to the effect that *Clematis Pitcheri* was scarlet, for he saw the flowers of the first plant imported into France. Here was a muddle, and all about an American plant. *Clematis Pitcheri* was originally described by Torrey and Gray, in the "*Flora of North America*," with "purple" flowers. We collected in Texas a purple-flowered Clematis which we labelled *C. Pitcheri*, and which passed under the eyes of both Torrey and Gray, without any hint that it was not correctly named. Then our specimen in the garden, with its large purple flowers, if it be not *C. Pitcheri*, what is it? Either we were wrong and our European friends right, or vice versa, and we looked up the matter. It seems that a scarlet-flowered Clematis was first collected by Dr. James on Long's expedition, and was recorded as *C. Viorna*, variety *coccinea*, and has since been regarded as a scarlet variety of the well-known *C. Viorna*, until Mr. Buckley came across it and gave it the name of *C. texensis*, though Dr. Englemann, regarding it as a species, had called it *C. coccinea*. Without going any further into the nomenclature, it appears this scarlet Texan Clematis has somehow reached Europe, and is known in both France and England as *C. Pitcheri*, while it is here known only in botanical specimens. Whatever it may be, it is not *Clematis Pitcheri*. We are glad to say that we have got upon the track of the plant, through an intelligent correspondent in Texas, and expect to have it in cultivation the coming summer. Whatever the botanists may do with it, it promises to be a desirable plant for our gardens.—"American Agriculturist."

Wintering *Mentha Pulegium gibraltarica*.—In several positions this plant has perished completely. We use it largely for carpet bedding, and have had it in different situations. The best and healthiest roots we have now have been in a rather damp, cool situation on the north side of a bed of shrubs. A number of roots taken up in autumn, and planted in a cold pit, have all perished; and nearly all of those growing in southern exposures in the open air have turned brown, and now appear dead. Evidently it winters best in a situa-

tion where the sun does not shine full upon it. I shall work up my usual stock by taking those roots from the north border, palling them into little bits, and dibbling them into warm pits. They increase rapidly in heat.—E. H.

Hardy Primulas.—It is interesting to note the difference which soils and climates make on these plants. In the south, in dry, warm soils, it is next to impossible to grow them at all, whilst in the north, especially in loamy soils of a good depth, they luxuriate to perfection. *P. cortusoides* acquires here a good size, and is a front rank hardy border plant. *P. amona* and its varieties have not succeeded here planted out permanently; but they were tried on warm exposures on the rockery, which may account for their failure. *P. japonica* does splendidly here as a border plant. The double varieties of *P. acaulis* do not succeed at all. *P. purpurea* and *alba* are the only sorts left, while just outside the garden are acres of single varieties of *P. acaulis* growing and flowering profusely. *P. denticulata* last year had on one plant fourteen of its lilac balls in perfection at one time. The same plant is pushing up again strongly this spring.—R. P. BROTHERSTON.

Pelargonium Daveyanum.—Mr. Williams will be glad to know that this fine old-fashioned hybrid Pelargonium is not lost. I have a plant of it in my possession at the present moment, and in the greenhouse from which it came to me there was, a few years since, a good stock of it. I believe, too, that it still flourishes in that home of every good old-fashioned plant, Wardie Lodge, Edinburgh. There are still several places where the Cape Pelargoniums are carefully cultivated and propagated. There is a capital collection of them at Kew; and Mr. Beech at Castle Ashby, and Mr. Baxter at the Oxford Botanic Gardens, deserve untold praise for the care and the energy which they have devoted to this most interesting group. I fancy, too, that Sir George Macleay and Mr. Green are well aware of the curiosity and value of the Cape Pelargoniums, and any visitor to the gardens at Pendel Court would soon discover that the time has not yet come when horticultural taste shall have so utterly degenerated, that a Cape Pelargonium is one of the good old things of the past. Pelargonium flavum is advertised in Messrs. Haage and Schmidt's last bulb catalogue. Talking of good old plants, can any one send me a cutting of the double Yellow Rocket (*Barbarea vulgaris* fl.-pl.) which, unfortunately, I have lost.—H. HARPER CHENE, Dry-ton-Beauchamp Rectory, Tring.

Snowflakes in the Wild Garden.—We have rarely seen anything more beautiful than a colony of the summer Snowflake on the margin of a tuft of *Rhododendrons* in the gardens at Longleaf, where they were planted by Mr. Taylor. Some of the flowers were on stems nearly 3 ft. high, the partial shelter of the bushes and good soil causing the plants to be unusually vigorous.

Hardiness of Azaras.—Notwithstanding the notes that have appeared from time to time in reference to the comparative hardiness of these elegant Chilean shrubs, the past winter has committed much havoc amongst them. In the arboretum at Kew, those unprotected, comprising the handsome *A. microphylla*, *dentata*, *Gilliesii*, *integrifolia*, &c., are killed, but *A. integrifolia* and the variegated kind trained against the wall of one of the houses are not much injured. Fortunately none are so rare but that they may be readily replaced.—W.

Tacca pinnatifida.—This plant, to which allusion was made at p. 266, under the name of *Ataccia pinnatifida*, closely resembles an *Amorphophallus* in its habit of growth, having a solitary pinnatifid leaf, borne aloft on a stout petiole from 2 ft. to 3 ft. in height, while its bearded inflorescence is very similar to that of *Ataccia cristata*, a well known stove plant from Malacca and Perak. This *Tacca*, however, is an economic plant of some value, being largely grown by the Sandwich Islanders under the name of "Pi," and a peculiar kind of Sago is obtained in quantity from its underground

tubers, and used by them as food. It grows very freely on the sandy soil near the shores of many Malayan islands, but is but rarely used there, as the Sago Palm yields an abundant supply, and Rice is there more plentiful.—F. W. B.

Calceolaria amplexicaulis.—In the notice of *Calceolarias* (p. 259) I was glad to see mention made of *C. amplexicaulis*, an old favourite of mine, and one that used to be in great esteem in Hertfordshire for bedding, a purpose for which it is one of the best and most continuous blooming kinds that can be grown. The way in which it is managed in gardens in the county just referred to, is to plant it in small circles on the Grass among other beds, where it is tied and trained to sticks placed and brought together at the top, something after the manner in which they are placed over a basket of plants when sent out from a nursery. Thus managed, they form magnificent pyramids, and soon hide the supports; but it is only in moist, cool soils that they do this, although this particular species will stand more heat and drought better than any other with which I am acquainted. Its colour is a very soft lemon; it is very free in habit, and, where the soil suits it, sends up a quantity of suckers that keeps up a constant succession of flowers till quite late in the autumn. The long period of time during which I have known this variety I have never once seen it diseased, a failing to which all others are exceedingly subject, and which makes them so uncertain. It is a kind which I can, therefore, strongly recommend. I am sure that any one who once has it will not readily part with it.—S. D.

Scilla sibirica.—The flowers of this Squill being of a deep and lovely blue, contrast vividly with the pure white of the Snowdrop, and form a feature of singular richness and beauty in the spring garden. If grown in the open border, care should be taken not to injure the bulbs by digging or hoeing. The roots should be allowed to remain in the ground for a lengthened period, like those of the Crocus and Snowdrop; and if the clumps get too large, they can be broken up with great ease, just as the tips appear through the soil than at any other time. Even when an abundance of roots is formed, large clumps will divide easily into several smaller ones, which may be at once replanted without any danger. For pot culture, it is well to proceed in a more methodical manner; and, looking at the great beauty of the flowers and the early period at which they appear, it is remarkable that this Squill is not more largely grown in pots for decorative



Snowflakes in the Wild Garden.

Purposes. A piece of ground, deeply dug and moderately manured, should be planted with bulbs in the autumn in small clumps of about six roots to each. If these be all sound (and this is not always the case with imported bulbs), each plant will be large enough to lift into 5-in. pots after a year's growth, that is, these newly-imported roots should be in the ground at least eighteen months before they are potted; this makes two relays of bulbs necessary. Once a stock is obtained, provision for an ample supply of flowers in pots is easy. The clumps should not be kept in the pots, but should be re-transferred to the open ground as soon as the flowers have decayed.—A. D.

Seedling Aubrietias.—The introduction of several rich dark-coloured Aubrietias, such as *A. Campbelli*, *Eyrei*, and *Hendersoni*, has lent additional value to these charming spring flowers for bedding purposes. Mr. Ingram, of Belvoir, has raised a pink kind, the flowers of which are small, but the colour distinct. I was fortunate enough to get a batch of seedlings last spring that furnished a number having very deep rich colours of quite a violet tint. Patches of these on rockwork, or masses in beds, with red and white Daisies and similar hardy bedding plants, would produce a striking effect in the spring garden. When the plants have done blooming, they should be lifted, pulled to pieces, and replanted in some shady place where they will make fresh roots, and become strong by the next winter. Treated in this manner, they will be found to give the greatest satisfaction.—A. D.

THE FRUIT GARDEN.

GOLDEN CHAMPION GRAPE.

THOSE who for a few years back have been in the habit of seeing some of the leading West of England Horticultural Exhibitions will have noticed the finely finished Grapes, especially Golden Champion, shown by Mr. Shore, gardener to the Rev. J. Heyworth, Henbury Hill, near Bristol. Being in the neighbourhood about the middle of this month, I felt desirous of seeing the Vine which produced these finely grown Golden Champions, a kind with which more fail than succeed. There were originally four other Vines in the house with their roots inside, but they succumbed to the Phylloxera, and I understand that there is still some of the insect on the small portion of roots belonging to this Golden Champion inside the house. It was grafted eleven years ago on Ingram's hardy prolific Muscat, a sort, if I recollect rightly, "let out" by the late Mr. Standish, of the Ascot Nurseries, but one which did not meet with much favour. The Vine in question now covers a large portion of roof, and the present season's shoots are remarkably strong, and showing quantities of large bunches, some of which looked as if they would weigh from 3 lb. to 4 lb.; none of the bloom was open, but the crop, so far as it has advanced, gives promise of being, as hitherto, very fine. The Vine is planted inside, in a small stone-enclosed space, so limited as to have no influence for or against the condition it is in. The roots pass through the wall to the outside in the usual way, first under a walk, and from thence through the immediately adjacent garden wall into a Grass field, where they exist in abundance, but no preparation has there ever been made for them, no fermenting matter to warm them, or anything to keep the summer's absorbed heat in or winter's cold rain and melting snow out. The case represents extremely opposite conditions as regards the temperature of the roots and top, much greater than I, or I suppose any one else, would recommend or through choice adopt. But there is this Vine, after such a winter as we have had, one amongst untold numbers of other Vines throughout the country in a similar state, giving silent but irrefutable rebutting evidence against the opinions of those who appear to look upon a warm condition of the roots as inseparable from successful Grape growing. Its present treatment, I understand, is just such as it has from the first received, and from the time when it first came into a bearing state it has always done equally well.

T. BAINES.

A VISIT TO THE THOMERY VINEYARDS.

THE village of Thomery lies about a mile and a half from the railway station, and a good bit of the forest of Fontainebleau is traversed between the two—the trees, Oak chiefly, standing thickly together like seedlings in a hotbed. Almost as soon as one emerges from the dense shade of the wood, he finds the road bordered on one side by Vine walls, and on the other by a rough fence, over which the field Vines scramble in a semi-wild state, like Blackberry bushes, and down in the valley below lies the village surrounded on all sides by Vineyards—some small, and some large, and all enclosed and subdivided by low mud-built walls, on which the Chasselas de Fontainebleau Grapes are grown, the fields being cropped with the commoner wine-producing sorts, upon which comparatively little pains are bestowed. Far out of the village the walls are clothed with Vine and Pear trees, trained in the most perfect and methodical fashion, and bearing heavy crops of fruit. The Grapes were not ripe at the time of our visit, early in August, but the Pears were; some sorts had indeed been gathered. The trees were not protected in any way, though the fruit was hanging temptingly ripe within arm's-length of the highway; and the border in which the roots of both Vines and Pears grew was only about 2 ft. wide, and was supported by a dry stone wall built along the roadside. A group of whitewashed buildings, a little way from the road, looks very much like a Scotch farmstead; but a peep within the enclosure shows that the arrangements and appliances are of a different order, and relate exclusively to the culture of the Vine. The walls of the court, the dwelling house, and sheds, &c., are all covered with the Chasselas de Fontainebleau (Royal Muscadine) Grape, and at a glance one can see that every shoot, and almost every leaf, is trained in its allotted space, and all the laterals stopped and pinched as if they had been newly gone over. It is the same in the village. Every wall appears as if it had just been newly whitewashed, and every cottage on south, east, and west exposures is covered with a mantle of green Vine foliage, under which the bunches hang in profusion, literally touching each other in some places. Every bit of available space is utilised, and not an inch more growth is permitted than is necessary to the successful fruition of the plant, which is cropped as heavily as it will bear. An English cultivator is rather disconcerted at the appearance

of the Vine borders in front of the houses—the border is the street, and is paved with large boulders right up to the stems of the Vines. Yet both wood and foliage are remarkably good and clean—scarcely any trace of spider or mildew to be seen—and the leaves large and leathery, and of a substance never seen in an English Vineyard. Of course, the thrifty cottagers simply utilise their walls in this way, and attend to the training and general culture of their Vines in the evenings—just as the English cottager looks after his Potato plot and garden when his day's work is done. In the Vineyards proper, devoted to the culture of dessert Grapes, Vines are trained to low walls from 6 ft. to 10 ft. high, and coped with brick tiles, the parallel strips of ground between the walls being devoted to the production of common wine-producing Grapes chiefly; some of the better sorts are also trained on espaliers in the open ground. There is nothing in the culture of the Vine at Thomery that particularly arrests the English Grape-grower's attention, unless it be the skill and method displayed in the training of the Vines, so as to get the greatest amount of fruit from a given space, combined with the cheap and simple, not to say primitive, but perfectly effective appliances employed to meet the end in view. There can be no doubt, we think, that the French excel us in making the most of means and appliances. Where we spend money they spend extra labour and attention, and with better and more constant results. This fact forces itself upon the stranger at once.

The winter of the north of France is more severe than that in this country, as is indicated by the single fact that the *Araucaria imbricata* is not hardy there, and consequently not planted as an ornamental tree, and the spring frosts are also severe, yet we are assured that the Vine crops at Thomery seldom or never fail, although the protective appliances—old-fashioned copings and sheets—are much the same as those used in this country fifty years ago or more. Expensive patent glass copings and such like are unheard of. Brick, deal, and plaited-straw copings, 9 in. or 1 ft. wide, were shown at the Paris Exhibition, but no glass ones, by French makers at least. Our settled conviction is that there is nothing to hinder dessert Grapes from being grown in the south of England just as successfully as at Thomery, and with the same means, if the cultivator would take the same amount of pains in their culture. Crops would undoubtedly be a little later in England, but not much, and it is perfectly possible to ripen Grapes after the autumn frosts set in. The Muscadine ripens in August and September at Thomery, and on espaliers later; but behind the house of M. Rose Charnoux, who is one of the principal cultivators in the district, there is an archway or covered walk, planted entirely with Black Hamburgs, or Frankenthal, as it is called there, which we were informed ripened a crop in October. Under this archway the bunches seemed to hang as thick as leaves, and were all hand-thinned.

The spur system of training, in some form or other, is generally adopted. When the Vines are trained vertically, they are planted 16 in. apart and the shoots are mostly trained from one spur, 8 in. or 9 in. apart, and as often as otherwise the shoots bear two bunches, each about half a pound in weight. It may therefore be guessed how heavy the crops are. We have heard of 40 lb. to 20 ft. rods in this country, the canes being trained 4 ft. apart, but the Thomery growers exceed this in some instances, as regards the Vine rod, and generally we should say as regards space. On one young Vine of Foster's Seedling, which is becoming a favourite for wall culture, we counted eighteen bunches on a rod about 5 ft. long, and we estimated the bunches at 1 lb. weight apiece; some of them would be 2 lb. Indeed, we never saw much finer bunches of that variety. In flavour it is not so good as the Muscadine, but its cropping qualities are a recommendation. The Vine that bore the above number of bunches had just a strip of wall 16 in. wide allotted to it like the others. No doubt the harder constitution acquired by the Vines, both in leaf and branch, enables them to bear such heavy crops. The wood of the Vines was brown and ripe to the ends of the shoots when we saw them, and a portion of the leaves had been picked off to allow the sunshine to get to the fruit to hasten its maturity. After the fruit begins to colour, this practice is not considered to be injurious in any way to the health of the Vines. The soil of the Vineyards is a brown, flinty-looking compost, and varies in depth from 18 in. to several feet, and the surface where the roots of the Vines are is mulched with decayed manure or litter. After the Grapes have been thinned, early in the summer, the after-culture consists almost wholly in training the shoots and pinching the laterals, the last being done by women who nip the shoots off with their fingers. The espaliers and bushes in the open quarters are not so particularly looked after apparently, but on the walls the laterals appear to be pinched as fast as they push, after the first stopping, little or no growth being permitted beyond the fruit, the exigencies of space demanding that every shoot be kept strictly within bounds. As to the quality of the Chasselas de Fontainebleau Grapes, they are

certainly superior to the same kind grown under glass at home, being well coloured, sweet, and of good flavour, very much superior to the foreign Grapes usually sold in this country during the autumn and winter.—“The Gardener.”

CLEARING STRAWBERRY PLANTS OF RED SPIDER.

The writer of the calendar (p. 257) recommends that Strawberry plants which are badly infested with red spider should be thrown away when removed from the forcing house, but there is no need to resort to this extreme measure, as in their case the spider may be promptly and thoroughly exterminated. When the plants are removed from the forcing house, they should be placed in a sheltered situation for about a fortnight, when they should be dipped in a mixture of soft soap and sulphur, which will not only kill the perfect insect, but will also destroy its eggs. In preparing the mixture, about 4 oz. of soft soap to 1 gallon of water will be necessary, adding thereto enough sulphur to cover the whole of the plant after immersion with minute particles. The sulphur should not be thrown loosely into the water, but should be first formed into a paste which will effectually disintegrate it. One plant thus smothered no living thing can exist, and in a fortnight the plants will be clean, and when planted out will grow away freely. Whilst dipping the plants the mixture must be kept well stirred and the water should froth. The sulphur will then adhere so tightly, that nothing short of heavy rains will loosen it. I generally employ one part black to two of flowers of sulphur. The black sulphur is very powerful, and should never be used under glass. It is indispensable that the foliage be well hardened before dipping the plants, or it is liable to be injured. I occasionally find that a few leaves get a little hurt, but when once the spider is gone the plants, if supplied with nutriment, start again vigorously into growth. Forced Strawberry plants yield a crop the following season when planted out, and therefore should not be destroyed. A well enriched piece of soil and an occasional watering in hot weather are all that they require.

It is inconceivable with what rapidity red spider will spread over a piece of ground in a hot, dry summer, and growers, as your correspondent wisely recommends, should be careful not to incur any risk. I have seen Scarlet Runners, bedding plants, and even Box edging almost ruined by this very small pest, and it is rare that Strawberry plants come out of the forcing-house entirely free from it; but, if treated in the manner just described, the little extra labour will be well repaid. The soil of a locality in which I once resided was very sandy, and consequently parched in the summer. British Queen grown under such circumstances was generally so attacked with red spider, that it could scarcely exist until dipping and syringing with soft soap and sulphur were resorted to. After that it grew as freely as the other kinds. This variety would appear to be peculiarly susceptible to the attacks of red spider, which fasten on it in preference to other kinds. To this cause may, I think, be attributed the inability to grow this highly-flavoured fruit in many localities. Plantations of it after bearing often die completely off, but if the plants were thoroughly syringed as soon as the fruit was gathered—choosing a period of dry weather for the operation—and then deluged with water, the ravages of this destroyer would be reduced to a minimum. These remarks apply more particularly to light, porous soils, where the foliage does not acquire the solidity which a strong loam imparts to it, and where it is more difficult to supply the necessary amount of moisture to the root.

J. CORNHILL.

Thatched Vine Borders and Vines Breaking Prematurely.

—Allow me to explain that when writing on this subject (p. 238) I accepted the advice given by Mr. Baines and others to cover Vine borders “early in autumn to retain the accumulated heat of summer” to mean the only thing apparently it could mean, viz., to cover the borders when the temperature of the earth was at its maximum, which it reaches in August, and does not subside very perceptibly till past the middle of September, within which period I apprehend “early in autumn” comes somewhere. I, however, accept Mr. Baines’ latest explanation, but it does not in the least alter the fact, that by covering the border in autumn we start the roots much in advance of the tops. Indeed, it is an aggravation of a practice attended, as we have been told, by bad results in every way and under all circumstances. As to the retained heat of summer not helping to cause the Vines to break prematurely, I can only say that I have lately been taught that bottom heat causes an undue development of top growth, and I suppose Vines are no exception to the rule.—J. S. W.

THE KITCHEN GARDEN.

ENDIVES GROWN FOR TRIAL AT CHISWICK.

By A. F. BARRON.

ENDIVES are divided into two great classes.

1. *Curled Endive*. The *Chicotte frisée* of the French.—Leaves deeply cut or lacinated and curled.

2. *Batavian*, or Broad-leaved. *La Scarole* of the French.—Leaves broad, resembling Lettuce.

The collection was sown on July 1, and treated in the usual manner for an early autumn supply. The season being favourable, the autumn fine and open, they succeeded well, so that the trial was, in every respect, satisfactory.

1.—Curled Endives.

1. *Ever White Curled* (Vilmorin). See White Curled.

2. *Fine Curled Moss* (Vilmorin). See Moss Curled. A fine selection.

3. *Fine Curled Picpus*. See Picpus.

4. *Fine de Rouen*. See Stagshorn.

5. *Gloria Mundi* (Minier & Co.). See Green Curled.

6. *Green very fine Curled Summer* (Vilmorin).—Leaves about 6 in. long, resting close on the ground, with a broad, fleshy midrib, the edges toothed and much curled, of a deep green colour. Forms very large, full hearts, which blanch readily and early without much tying. Crisp, fleshy, and excellent.

7. *Green Curled* (Minier & Co.).—Leaves from 7 in. to 8 in. long, lying flat on the ground, very deeply cut and toothed, of a bright green colour. Forms large, full hearts, which blanch readily on being tied; somewhat liable to rot in wet weather.

8. *Green fine Curled Winter* (Vilmorin).—A good selection of Green Curled.

9. *Green Curled Ruffec* (Vilmorin).—A very good selection of Green Curled.

10. *Imperial Curled* (Vilmorin).—A variety of the White Curled, with broader leaves and not quite so much cut. Good.

11. *Laciniated Louviers* (Carter) (Vilmorin).—Leaves short, very deeply cut and laciniated in a singular manner; of a dull glaucous green colour. Forms close, full hearts of excellent quality, which blanch naturally to a good extent. This variety will not tie up; requires covering up to blanch thoroughly; very hardy.

12. *Large Ruffec* (Watkins & Simpson). See Green Curled.

13. *Louviers*. See Laciniated Louviers.

14. *Moss Curled* (Carter) (Minier).—Leaves very short, very finely cut and curled like Moss; of a bright green colour. Forms small, compact, full hearts of very fine quality. This variety is too small to tie up; requires to be covered up to blanch thoroughly. Fine for garnishing and for early use, but very liable to rot in moist weather, and is rather tender.

15. *Picpus* (Vilmorin).—Leaves long, lying flat on the ground like the Green Curled. Of a very deep green colour; deeply cut and finely curled, thick and fleshy. Forms very large, full hearts of fine quality. A very fine vigorous-growing variety; one of the best types of Curled Endive. First-class certificate.

16. *Rouen*. See Stagshorn.

17. *Ruffec*. See Green Curled.

18. *Stagshorn* (Vilmorin).—Leaves very short, very deeply cut; like the Louviers, but somewhat smaller than that variety; very hardy.

19. *Selected Green Curled* (Veitch).—A good selection of Green Curled.

20. *Wrench's Moss Curled* (Wrench). See Moss Curled.

21. *White Curled* (Carter) (Minier) (Veitch).—Leaves from 7 in. to 8 in. long, lying flat on the ground, deeply cut and finely curled; of a very fine pale green colour, hence called white. Forms fair-sized hearts, but requires tying up to blanch thoroughly; a very distinct variety in appearance, and hardy. First-class certificate.

2.—Batavian or Broad-leaved.

22. *Broad-leaved* (Vilmorin). See Round-leaved.

23. *Broad-leaved Winter* (Vilmorin).—Leaves long, broad; deep green, slightly toothed and wavy in outline; requires tying up to form hearts. A good, hardy, late variety.

24. *Fraser's Broad-leaved* (Minier) (Veitch). See Broad-leaved Winter, No. 23.

25. *Green Batavian* (Carter).—Leaves very long, narrow, forming small hearts. Worthless.

26. *Round-leaved* (Carter) (Minier) (Veitch).—Leaves from 10 in. to 12 in. long, broad, light green, toothed and wavy in outline, the outer lying flat on the soil, the inner incurving from the points and thus forming a close heart, which blanches naturally to some extent.

When tied up, a close, firm heart is formed, as white as ivory and of excellent quality. This is by far the best Batavian Endive.

27. *White Batavian* (Carter) (Minier) (Veitch).—Leaves long, resting flat on the ground; of a pale green colour. Forms small hearts, which require tying up. Very apt to decay in moist weather. Worthless.—“Royal Horticultural Society’s Journal.”

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

The Dalmahoy and Regent Potatoes.—Allow me to testify to the correctness of “J. S. W.’s” description of Dalmahoy and Regent Potatoes. The White Don does better here as a second early sort than any other which we have tried. Mr. Baines is surely mistaken when he classes Victoria with the Regent. The cottagers about here show it as a Kidney in its flattest form. In its roundish form it is quite distinct in appearance, as well as in other points, from the Regent. I would recommend Walker’s Regent as the best disease-resisting of the type.—R. P. BROTEBESTON.

—That the Regent and Dalmahoy Potatoes were identical at Chiswick cannot be disputed. About thirty samples on the aggregate were obtained from all parts of the country, and planted side by side. These samples had been grown in different soils and climates; the first year some were a little more forward than others, and the tubers of some handsomer than others. Sets were carefully saved of each sample, and the result of the second year’s trial (confirmed by a third year’s experience) was, that all differences had disappeared. In height, in the character of the haulm, in the colour and size of the flowers, there was no perceptible difference between Dalmahoy and Regent.—R. D.

—Without entering at all into the discussion as to whether the Dalmahoy, Regent, and others are distinct varieties or not, I can truly say that my somewhat lengthened experience of Potatoes has led me to arrive at pretty much the same conclusions as those which Mr. Baines appears to have come to, and, like him, I am clearly of opinion that any one who has the true Regent and a soil that suits it, can have none other at present among the many much vaunted kinds at all equal to it, or that will in any way approach it for quality and flavour. As to the American sorts, the most that can be said for the majority of them is, that they are heavy croppers, but I venture to predict that they will be discarded and forgotten in less than half the time the Regent has been in cultivation. Why the very name of this latter helps to sell others, for if I mistake not, the Schoolmaster was said to be an improved Regent, or to possess some of its qualities, and also Patterson’s Victoria, thus showing that the great repute it has gained may be used as a testimonial for others. No doubt there will always be buyers of new varieties of Potatoes, as there are of other novelties, and it is well there should be as an encouragement to raisers, but that does not alter the fact that old sorts are not yet beaten, neither does it appear likely that they will be for some time to come. Until I can find something better than Ashleaf, Regents, Flukes, and Rocks, I shall stick to these almost exclusively, as I have had quite enough of most of the others. Prizes given for Potatoes at a show are a delusion, for the adjudicators can know nothing of their merits for the table, and can only make their awards haphazard, except so far as the clearness of skin and shape may help in leading to a decision.—S. D.

Hardiness of Broccoli.—The evidence furnished by the state of the Broccoli plantations this season seems to me to be conclusive in favour of planting in an open, airy situation, and to plant far enough apart, so that the plants may acquire a hardy constitution, and build up a firm, hard growth. The late kinds with us have suffered little or no injury. Among newer kinds Lauder’s Goshon seems a very hardy, desirable kind; Cattell’s Eclipse, Watt’s Excelsior, and Veitch’s Spring White are also in good order, although the lower leaves are somewhat browned, and the plants generally are rather smaller than usual at this season; but the long severe winter will easily account for this. Such kinds as the Leamington, Cooling’s Matchless, Early Penzance, Sussex Winter, and Veitch’s Self-protecting have all suffered more or less, and those occupying comparatively sheltered situations most of all. Still there is not much harm done; and Cabbages planted thickly on a warm south border have already, since the change in the weather, made considerable progress, and will soon come into use.—E. H.

Red Genoa and New Giant White Tripoli Onions.—These two sorts have stood apparently unhurt with me here during this last winter without any protection whatever. The seeds were sown the first week in August on an open space in the kitchen garden. They came up very thickly, and were allowed to remain in that condition, although against the old rule as to leaving them thick during winter.—J. WINFIELD, *Bulth.*

ROSES.

ROSES PLANTED OUT AND IN POTS.

Pillar and Rafter Roses.—The great thing to contend with in the cultivation of Roses on the rafters, pillars, and walls of green-houses and conservatories is their liability to be attacked by aphides and red spider, and the difficulty that besets their destruction in such situations. In the case of aphides it will frequently happen that climbing Roses in these positions are the only subjects in the house affected, and, where the structure’s non-attachment to a dwelling house makes the fumes of Tobacco less objectionable, there is still the cost of the material in fumigating a house for the very few plants thus infested, and to syringe them with Tobacco water, Gishurst, Quassia, or other of the liquids used for insect destruction is generally out of the question on account of the condition in which these leave the woodwork and glass of the building. On this account I have always found it absolutely necessary to look over Roses in situations of this description every week at this time of the year, for, if allowed to become infested thus early, the coming flowers and tender foliage are injured. When the young growths are at all troubled with the aphides they should be at once dipped in Tobacco water. To prevent red spider, which, with the increased sun’s warmth, makes its appearance very early upon Roses, little can be done in such positions except repeated syringing with clean water; this is often disagreeable in conservatories, &c., through wetting the flowers and foliage of plants that are better without it, nevertheless, it becomes necessary, and the work should be done in the mornings of bright days, when all upon which the water falls will be likely to get speedily dried up. It is well to regulate the young growths of plants in situations of this sort—both the weaker kinds and vigorous growers, like *Maréchal Niel*, the climbing *Devoniensis*, and *Lamarque*, thinning out the weak spray not strong enough to bloom. One of the principal things to be attended to in the cultivation of Roses in these positions is the encouragement of strong young shoots from the base, or sufficiently low down the stems to furnish the particular places they happen to occupy; when this is not done there is generally a disposition in Roses so grown to make all or the greater part of their growth towards the top, leaving an unsightly portion of bare stem. With sufficient forethought in pruning this can be avoided by, from time to time, cutting some of the old strong shoots low enough down to the point from whence they spring, which will cause the lower eyes to break. Where this was not done when they were pruned in the winter before growth commenced, and there is an evidence of their getting into the condition described, there need be no hesitation in shortening a portion of such shoots now. Roses so grown, particularly where there is more heat employed than is necessary to keep out frost, are always apt to suffer from mildew, caused by the admission of cold external air in direct contact with the young foliage; during this month, when accompanied with bright sun, the air is often very keen, and care should be taken to admit it where it will be least likely to affect them injuriously.

Roses in Pots.—Attend regularly to the routine requirements of these in their different stages, whether they are plants that have been forced through the winter and are now making growth that will furnish successional flowers, or those that are coming on with their first bloom. Use every means to keep them clear from insects; one of the best ways of effecting this I have found to be syringing with water slightly impregnated with soot—say, a large handful to three gallons, well stirred up, and then allowed to remain for two or three days, pouring it gently from the vessel in which it has stood, so as to leave the sediment in the bottom. Soot is so disliked by insects generally that thus applied it has the effect of rendering the foliage distasteful to them. To plants that have been growing through the winter liquid manure will now be of the greatest assistance. Roses will endure it stronger than many plants, and I should recommend soot to be added to whatever else is used. Not only is it invigorating but I have remarked that plants in pots which received it in a liquid state were always less subject to the attack of insects than where it was not used. It is also the best and safest eradicator of worms. There is another matter connected with Rose growing in pots in private establishments which often escapes notice. By some a Rose in the winter and early spring may be reckoned simply as a Rose, little regard being paid to the form of the flower, yet I frequently hear the question asked by those who grow their own Roses, “How is it that the beautiful, long, half-expanded buds to be seen in the London flower shops are so superior to those of home growth?” It is simply a matter of a little manipulation; the London forced Roses have such a thin ligature of bast tied round the buds at about one-third the distance from the base of the flower when they have slightly begun to open, and there this ligature is allowed to remain until the blooms

are at and ready for use. This permits the development lengthwise without allowing them to expand. At first eight such work might appear tedious, but a small amount of practice will enable anyone in a short time to go over a considerable number of plants and tie the blooms in this way. The bast must neither be too tight nor too loose, nor is it possible to convey in writing the exact point to which tying should be carried, as different varieties require to be somewhat differently dealt with in this matter. A little observation will, however, soon assist those engaged in securing every bloom thus grown in a very much handsomer condition than if left to itself. Any of the earliest forced plants that do not show an ability to produce many more flowers should be transferred to cold pits or deep frames, where they will be gradually hardened off. On no account should they be turned out into the open air until the season is sufficiently advanced. Where room in continued warmth can be afforded for such plants to go on and make further growth, it will tend to much increase their size and strength, by which their blooming for the time to come will be proportionately influenced.

Outdoor Roses.

Pruning.—The remaining portion of Roses may now be pruned. I take it for granted that those for whom these remarks are intended require their Roses for general purposes, and not for exhibition. With dwarfs, either grafted or on their own roots, and which are cultivated on the pegging-down system, the old shoots that were last year trained down should be cut out altogether in the case of very strong established young plants, and shortened in the case of such as are weaker, or that have only been planted one year. As a matter of course, the last summer's shoots that have sprung from the base of these dwarf pegged-down plants will now be in an erect position. With strong plants, the weakest of these may be completely cut away, shortening the strong ones in proportion to the space to be covered when pegged down. Whatever manure is needed should then be put on and forked in without disturbing the roots, and, if the nature of the land require it, some more may be put on the surface by way of a mulching. The necessity for doing this before the shoots are pegged down, an operation which should be done at once, will be obvious. Any Roses on walls that yet remain unpruned should have this work no longer delayed, for even in the northern portion of the country we are not likely to get frost that will injure them after this time. On account of the difficulty frequently experienced in applying manure to the roots of Roses in such positions, they are more liable to get into a weak condition from want of it than when planted elsewhere; but if they are to be kept in a free-growing, satisfactory state, manure, in either a liquid or a solid form, must reach the roots in some way.

Pillar Roses, and also those on arches spanning walks, or in similar positions, need to be left in a way that will exhibit more freedom of shoot development than would otherwise be necessary, as it often happens that in pruning and training the work is done in a manner which gives them an even-clipped appearance, a character so desirable to avoid. Instead of all the shoots, weak and strong, being cut to a uniform length, it is much better to thin out a great number of the weaker growths, leaving each year the stronger ones cut to different lengths. In this way by the time they get into leaf they will have a free, open appearance.

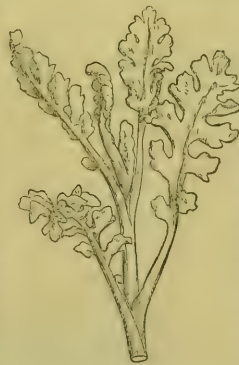
Rose Hedges.—There are no more beautiful objects in a garden than divisional hedges, or screens, composed of Roses, when these are managed as they ought to be, which is often far from being the case. Roses in an ordinary hedge-like form, when in flower, are certainly most effective, but the more or less even outline is an objection. The most pleasing arrangement which I have ever been able to hit upon, when Roses were employed as a divisional screen, was fixing a light, thin, inexpensive sort of improvised trellis-work, made of iron rods overlapping each other so as to support the plants, and keep the whole from being blown out of shape by strong winds. It was intentionally so far uneven in height, that it varied from the lowest points, which were not more than 4 ft. 6 in. out of the ground, up to 7 ft., the highest. Until the Roses had grown so far as to cover it the appearance was not such as to satisfy those who are fond of everything trim and even. The irregularities of height were still further brought out by the different colours of the kinds planted, and which varied from the deep crimson Boursault to the Ayshire Dundee Rambler (white), the pale flesh-tinted Gloire de Dijon and others of similar habit that occupied places on the trellis which admitted of their growing higher than the others, that produced flowers of a character more in keeping with the generally accepted form which Roses ought to have than the climbing kinds. They were old sorts, such as *Chânelôis* (crimson), *Madame Plantier* (white), *William Jesse* (crimson, shaded with lilac), *Paul Ricaut* (rosy-crimson), *Juno* (pale rose), *Coupe d'Hébé* (pink), and *Blair No. 2* (blush). The

advantages this light ironwork had over a wooden fence that would give a light appearance were that it cost less to begin with, was less objectionable to the eye and more durable. T. BAINES.

Roses with their Roots in Inside and Outside Borders.

—As bearing on the question sometimes discussed as to the relative temperatures of borders inside and outside of glasshouses and their effects on the growth of plants, I have observed that in our Rose house here—a cool house, where the growth is natural—*Maréchal Niel* on a Brier stock, with its roots growing in a cold, stiff, clayey loam border outside, facing the east, is making growth quite as early as the same Rose is doing in an inside border, or rather bed, as the soil is raised some 2½ ft., and is enclosed all round by a brick wall. This should make the soil at least several degrees warmer than that outside, but the growth shows no advantage. It is, therefore, evident that the action of the plant is more governed by the atmospheric temperature than by the terrestrial condition of the roots. I have also observed that that charming tinted Tea Rose *Homer* has the advantage of all others in the earliness of its growth, which is quite 2 in. in advance of *Maréchal Niel*, although this sort also has its roots on an outside border, but on the west side. This is a capital Rose for house work, as it grows freely, does not push away several long, woody growths, but gradually covers the trellis. Some kinds, such as *Lamarque*, grow away with a rush, having a few specially long shoots that soon reach the top of the house. These should be planted alternately with the more bushy kinds, and thus the house will be evenly covered. Cuttings of *Maréchal Niel* put in just after the bloom was over proved a great success. These are now strong enough to be shifted into 8-in. pots, and, doubtless, will presently each carry some fine blooms.—A. D.

PROPAGATING.



Cutting of *Cineraria maritima compacta*.

CINERARIA MARITIMA COMPACTA.

—This beautiful dwarf, white leaved variety, the finest on the class to which it belongs, is best increased by means of cuttings, made as herewith shown. They should be inserted in February and March, and should be taken from plants that have been placed in a warm greenhouse. Four-inch pots, drained well, and filled with fine, sandy soil, are those most suitable for the purpose. Insert the cuttings, and tighten them well in; give them a good watering, but not over the leaves, and place them in the cutting box on a gentle bottom-heat, in which they will strike root in about ten days. They may then be gradually inured to the air before they are taken out. If any of them require water before they are rooted, they must be taken out and watered, so as not to damp the leaves. This *Cineraria* may also be increased in September by means of side shoots taken from plants out-of-doors and put in a close frame on a cold bottom. When rooted, place them in the greenhouse for the winter. H. H.

Centaurea ragusina from Cuttings.—I quite agree with all that "D." says (p. 250) in favour of this charming silvery-leaved plant; but doubtless many find it difficult to get a stock of it, either from seed or cuttings, compared with the facility with which soft-wooded plants are, as a rule, increased in such ways. For several years past I have raised it from seeds; but, although by no means a novelty, the number of seeds in a packet is so limited, that it takes a good many packets to get 400 or 500 plants. With, however, a few plants planted out in good soil in spring to start with, a good many side shoots may be obtained from them in autumn. These, if taken off with a heel of old wood and inserted singly in 2½ in. pots, tying the foliage up to a single stick, and plunged in a cold frame, will strike root with scarcely any loss. The old stools may be lifted and wintered in a cool house, and at this season, if subjected to a gentle heat, they will yield a quantity of side growths for propagation.—J. G.

PARK ROADS.

LONDON is not the only place (see p. 88) where so-called macadamising is carried out by contractors and others, nor is the "Pall Mall Gazette" the only paper that has directed attention to the matter, for the same thing has been adverted to in THE GARDEN more than once. On roads and drives, on private estates, and even on the highways, which are supposed to be managed by people who understand their business, plenty of examples of macadamising are to be found that would make the hair of the original inventor of the system stand on end were he alive. The real truth of the matter is that the majority of people who have to do with road making only know the system by name, and have a vague idea that it simply means spreading plenty of stones on the ground and nothing more. Hence it is that so many roads are a continuation of heights and hollows, which are always being repaired with no better result, and to the continual inconvenience of traffic and discomfort of pedestrians. Few people know how easily a good and properly macadamised road can be made, or understand how excellent and enduring such a road is. A man who understands the system, and sees it carried out properly will make a better road with a few inches of broken stones than others will make with three times the quantity of material, not to mention useless labour. Macadam cared very little what sort of a bottom he had to deal with if it were not an absolute morass, and he was not often deterred by that. "For a road," he says, "it is not necessary to lay a foundation of large stones, pavement, &c., as it is a matter of indifference whether the substratum be hard or soft, and, if any preference is due, it is to the latter." These statements look like heresy compared with much that we have read on road and walk making, but the great road maker was right, nevertheless. First of all, whatever the bottom was like, he took care to see that the ground had evenly settled before the stones were spread upon it, that there might be no subsidence in any part afterwards to cause inequalities, a matter which is often overlooked. When the roadway had to be prepared, large stones dug out of the ground, or any inequalities to be made up, the ground was afterwards left to settle before proceeding further with the work. In putting on the stones quite as much care was exercised. First, the hardest stone in the district was procured—granite, flint, or whinstone; next, it was broken to the regulation size—in pieces about 1 in. in diameter, though a rougher size will do; and, lastly, the stones were not laid on the road, but spread shovelful after shovelful to the depth of from 6 in. to 10 in., which was considered sufficient for general highway traffic. The road was made slightly higher in the centre than at the sides, to throw off the water, as the object was to form an impermeable crust that would keep the water from percolating to the bottom, thereby rendering it soft and causing it to work up, the necessary drainage being, of course, secured in the usual way. This is macadamising in the proper sense of the term, a system which has nearly superseded every other, but it is the attention to trifles in carrying it out that makes perfect work. For example, many people would attach little importance to the stones being broken or angular, and be quite as indifferent about the mode of spreading them on the road; yet these are two of the most important points. The use of water-worn stones of the same size, will not make a solid crust, because they yield to pressure, their round surfaces offering little or no resistance; but it is different with broken stones, which, when of uniform size, and clean, and properly spread on the ground set fast on the same principle as that of an arch. I have seen roads made on an extensive scale on this system, and had to make such myself, and I have never seen anything to equal them. Garden walks, which are often cut out deep and filled in in the bottom with large stones, may be made on Macadam's principle with far less trouble and with much better results. Broken stones, to the depth of 2 in. or 3 in., will be quite sufficient, and they should, after being spread on, be beaten even on the surface with broad wooden rammers. This sets the crust effectually at the beginning. Afterwards a thin coating of clean gravel should be spread upon the surface to hide the stones, but no more. Such a walk is smooth and firm, and comfortable to the feet in all weathers; rain only washes it

clean, and frost has not the least effect upon it if the bottom be drained. The material holds no moisture to freeze; it is the accumulation of soft gravel on the surface of walks that freezes and renders them so muddy and uncomfortable afterwards. With us the stones are broken by a machine to any size we want them.

J. S. W.

PLATE CLXXIV.

TWO ALPINE FLOWERS.

The two Alpine flowers here figured are among the most beautiful yet introduced to our gardens, in which, however, they are not often seen in good condition. *Gentiana bavarica* is indeed very rare in gardens, as compared with *G. verna*, and rarely well grown. In size and flower this species resembles the Vernal Gentian, but is very readily known from that by its smaller Box-like leaves of a yellowish-green colour, and by all its very small stems being thickly clothed with foliage, forming close, dense tufts, from which spring flowers of the deepest and most brilliant blue, which, as the observer gazes at it in admiration, seems occasionally flushed with a slight tinge of deep rich purplish-crimson. The flower is even a shade more lovely than that of *G. verna*. The plant is a native of the high Alps of Europe. *G. verna* occurs in the same place abundantly; but, while it is found on dry ground, or ground not overflowed by water, *G. bavarica* is seen in perfection in spongy, boggy spots, where some diminutive rill has left its course and spread out over the Grass, not covering it, but saturating it so that when you walk upon it the water bubbles up around. There can be no doubt that we must imitate these conditions as far as possible if we desire to succeed with the plant in England. The best thing to do with it is to plant it near the margin of a rill that falls from a rock-work, taking care to let no *Carex*, *Couch Grass*, *Cotton Grass*, or other strong-growing subjects get near the spot, or they would soon cover and destroy the plant. It may also be grown in pots, plunged in coal-ashes or sand during the summer, sandy loam to be the soil used; the plants to have repeated and abundant waterings from early spring till the heavy autumnal rains set in, or to be placed standing half plunged in water. In all cases it must have free exposure to light.

AQUILEGIA GIANDULOSA is a very beautiful species with handsome blue and white flowers and a tufted habit. It flowers in early summer—a fine blue, with the tips of the petals creamy-white, the spur curved backwards towards the stalk, the sepals dark blue, large, and nearly oval, with a long footstalk. The leaves are much divided, the upper part of the stem covered with glandular hairs. It is a native of the Altai Mountains, and one of the most desirable kinds for the rock garden, or the select border, in well-drained, deep, sandy soil. It is increased by seed and by very careful division of the fleshy roots when the plant is in full leaf. If divided when it is at rest, the roots are almost certain to perish, at least, on cold soils. This plant thrives better in northern gardens than about London, though we have seen it growing freely at Slough.

J.

Variegated Funkias as Pot Plants.—The beautifully variegated forms of this useful genus have, during the last few years, been in great favour as edging plants for sub-tropical beds, and, being hardy, they meet the wants of many small cultivators, who, having a limited quantity of glass, cannot preserve more tender subjects; I have lately been pleased with the beautiful effect which these plants produce under glass in pots for indoor or conservatory decoration. A few established plants in pots were placed in gentle heat along with *Deutzias*, *Spiræas*, &c., and the clearness and beauty of the variegation rendered them exceedingly effective. Such sorts as *F. Fortunei argentea*, *F. japonica lutea*, *F. lancifolia albo-marginata*, *F. ovata variegata*, *F. undulata variegata*, are all exceedingly beautiful; being of easy culture, they cannot fail to succeed under the most ordinary circumstances. Good clumps, lifted in autumn and placed in pots just large enough to hold the roots, and plunged in leaves until Christmas, will, when introduced to gentle warmth, prove no mean rivals to many of the stove plants that must be grown in a high temperature the whole year round.—J. G.



THE BAVARIAN GENTIAN [GENTIANA BAVARICA.]



ALTAI COLUMBINE. [AQUILEGIA GLANDULOSA.]

GARDENING FOR THE WEEK.

Indoor Plant Department.

Tree Ferns are often grown much too warm and moist. Under such treatment they attain a larger leaf development, and frequently a deeper green tint than they otherwise would do; but so managed they are not nearly so useful, the result being that they generally soon outgrow the limits assigned to them, and if they have to be moved for decorative purposes to other places they are a good deal more susceptible of injury. This particularly applies to the well-known *Diksoonia antarctica*, the distinct and handsome *D. squarrosa*, as well as to *Cyathea*s, especially *C. princeps*, a plant often known as *Cibotium princeps*, which, though beautiful when grown with too much heat and moisture, soon gets so large as to smother everything else near it. The fine varieties *C. Burkei* and *C. Dredgei* are scarce and dear, but for all ordinary decorative purposes *C. dealbata* is not only one of the most beautiful of all Tree Ferns, but from the hard, tough, whalebone-like texture of its fronds, will bear more ill-usage than any other species. Some of the oldest fronds of all these plants will now begin to have a rusty appearance, but, unless in the case of specimens which are exceptionally strong, and that produce fronds larger than may be desirable, I should not recommend the removal of any of the old leaves that yet retain vitality until the young fronds in course of development are fully grown; they must now have plenty of water at the root. I by no means recommend their having too much root space, which is a great mistake as regards the cultivation of tree ferns, unless in the largest houses where head room is not limited.

Small-growing Tree Ferns.—Those handsome miniature Tree Ferns, the *Lomarias*, of which *L. cycadifolia*, *L. discolor*, and *L. zamiaefolia* are such beautiful examples, can be grown in small houses where the larger species could not be accommodated. These and also the well-known *L. gibba* will do better with warm greenhouse treatment than in a hot stove. *Brahea insignis* is another of the small representatives of arborescent Ferns, even superior to the *Lomarias*, but it requires more warmth.

Cibotiums.—Where those grand, wide-spreading, drooping-habited Ferns, *C. Schiedei* and *C. spectabile*, can be elevated sufficiently high in the Fernery to show off their beautiful fronds to advantage, there is nothing in the whole family of Ferns that surpasses them. They need a moderate amount of heat and more root space comparatively than the tall-stemmed kinds, without which they have usually a sickly yellow hue. If there be a disposition to confine their roots, they must be regularly supplied with weak manure water through the growing season. Where large fronds are required to mix with out flowers, it is a great advantage to have such as will last long in good condition. For this purpose the creeping, rhizomed *C. glaucescens*, or, as it is more generally known, *C. Barometz*, stands unrivalled. This is one of those strong-growing species that can be planted out on a mound in a moderately warm Fernery; for, although, if left uncontrolled, like most other strong growers, it has a disposition to encroach upon and smother smaller kinds, still, a free use of the knife in reducing the matured fronds during the winter season, when they will be found most useful employed in the way above mentioned, will always keep it within due limits.

Gleichenias.—These will now begin to grow apace, and, if, at the time recommended for general potting, there were left over any with insufficient room, this at once should be supplied, as there are no plants in cultivation with which I am acquainted that suffer so much from want of space to allow their creeping rhizomes to spread.

Gymnogrammas.—These are not generally so much cultivated as they once were, doubtless on account of their requiring a higher temperature than most Ferns, and also because they are of comparatively little service for cutting, yet there are some amongst them so distinct and beautiful as to deserve a place wherever there is the means of growing them. Amongst these may be reckoned the best small forms of the golden *G. chrysophylla*, the silver *G. tartarea*, *G. peruviana*, and *G. lanata*, all of which will now be commencing to grow, and must be supplied with heat and root moisture, but they should never be syringed overhead.

Platycterium.—*P. grande*, the finest of all this section, is deserving of cultivation, not only in the Fern house, properly so called, but anywhere where there is an intermediate temperature, with an end wall or a shady corner at which it can be placed. The only points of importance that I have found essential to a successful cultivation of this plant, are never allowing its roots to get too dry, but in giving water to them, to see that it does not get in any appreciable quantity to the layers of old dead shields that remain under the living ones, for if these are much wetted, it frequently happens that they communicate decay to the later formed living ones, laying

over and in contact with them before those last produced cover them; therefore be extremely careful that the young shields and also the fronds do not receive the slightest touch until they are perfectly developed. They are also liable to the attacks of Thrips, which directly disfigure them; shading them from the influence of the sun is at all times necessary. The distinct and handsome but smaller growing *P. Stemmaria* succeeds in a warm greenhouse under much the same conditions as those required by the common Elk's Horn, *P. alcicornine*.

Flower Garden.

Auriculas.—Choice-named varieties of these should now be removed into the show house. Many of the pips are opening, but the best pips will not open without a little heat; they will do fairly well in frames, should the weather be mild; but dull, cloudy weather, and the temperature but little above the freezing point night and day, will be productive of mischief. It is astonishing to see how tenaciously some growers cling to old customs. Even the old-fashioned wooden shutters may yet be seen in some districts, and pots 6 in. or 7 in. in diameter with a Smiling Beauty or Colonel Taylor of small proportions pining away in the centre. The air of ordinary Auricula frames is too cold and damp for the most tender flowers. Placing mats on the frames at night and removing them in the morning is also troublesome. Alpine Auriculas are much more hardy than other kinds; even the finest varieties of them have stood out during the present winter in the open ground without injury, and, although behind those in frames, they look as well, and promise to produce flowers quite as freely. Their being later is all the better, as they will succeed those under glass. The Auricula will stand a zero temperature if the ground be dry, but stagnant water is fatal to it.

Carnations and Picotees.—The weather has been comparatively favourable for plants of these that have been potted into their flowering pots and placed out-of-doors. Although the east winds have been cold enough, there have been no heavy rains. See that the plants are quite secure, and if any of them show, by their foliage shrinking, that a wireworm is at the root, remove the plants and destroy the intruder. Now is a good time to sow seeds to produce strong flowering plants for next year. Sow in pots or pans, which may be placed either in a cold frame or on a gentle hotbed, on which the seeds will vegetate rather more freely. The frame might also be available for many other subjects, such as *Asters*, *Stocks*, *Zinnias*, *Rhodanthes*, and other half-tender annuals which may be sown at this time. See that the ground is in a friable state between rows of seedlings that are expected to bloom this year. Look for slugs and the leather-coated grub, which still does mischief if unchecked.

Dahlias.—Success on the exhibition table in reference to these can only be attained by good treatment now. See that they are not coddled too long in heat, nor exposed to cold east winds. The soil where the plants are to be placed should be turned over in fine weather, and a reserve of suitable compost may be prepared to place round the roots at planting out time. Supports for them should be prepared.

Gladioli.—The general collection of these may now be planted out, and of all the plants with which we have to deal the Gladioli, more than any other, requires a light, deep, rich, well-prepared soil. A change of stock is essential to continued success on the exhibition table or to produce the best flowers for other purposes. I have not yet found a better way to plant the corms than that of drawing drills, as for Peas, 18 in. apart. Plant them from 6 in. to 1 ft. apart in the rows, with a little sharp white sand under and over each corm, then fill up the drills with maiden loam well pulverised.

Phloxes in Pots.—If the frames are wanted for more tender subjects, these may well be placed out-of-doors in a sheltered situation. See that the plants are potted at once, if not already done.

Polyanthuses.—The beauty of these pretty spring flowers cannot fail to win its way to the hearts of all lovers of hardy plants. I well remember admiring a bed of them in Yorkshire, in which there were thousands of them in an out-of-the-way corner. They are of such a hardy nature that they do not refuse to grow even when partially shaded, or they will stand in open quarters just as well. The choice sorts in pots should now be crossed in order to produce seeds. Pin-eyed flowers, that is, those with the stigma protruding from the mouth of the corolla, produce the best seeds. The flowers of course must be well marked, and in all other respects what a Polyanthus ought to be. The plants have grown so much that it has been necessary to remove the pots to give them more room.—J. DOUGLAS.

Parks and Open Spaces.

Pruning.—Where pruning is necessary in consequence of shrubs having become overgrown, or from other causes, the general character of each must be preserved as far as possible. The beauty of shrubs, and also their utility, lies very much in their individuality; those whose habit is spreading should not be pruned to form close bushes,

and *vice versa*. The same applies to trees, and where it is necessary or desirable to prune with the object of preventing injury from high winds, my opinion is that it is much better to take out whole branches close to the stem than prune the branches themselves; this method, whilst thinning out the superabundant wood, does not destroy the character of the tree thus operated on. Speaking generally, however, trees should be artificially supported until they are capable of taking care of themselves, and I cannot help thinking that, so far as regards towns, those trees which have never been pruned are by far the handsomest.

Ivy and other Edgings.—These, when kept in good condition, are extremely effective, but the contrary is the case if neglected. Ivy and *Euonymus radicans* are useful town plants, and edgings of these from 1 ft. to 2 ft. in width are especially adapted for small open spaces, as, for instance, squares. The decaying shoots of each should be carefully pruned out and all dead foliage removed. Then the best and strongest of the young wood should be retained and regularly pegged down, putting in new plants where required. A light dressing of thoroughly decayed manure will also be found very beneficial.

Hedges.—These may with propriety be planted along the fences of public or private squares where it is not intended to use the banks amongst shrubs for flowers, and, without doubt, one of the very best shrubs for this purpose is Privet. A hedge of this neatly trimmed prevents the bare branches of larger shrubs from being seen.

Planting.—Although many perennials and annuals succeed fairly well in plantations which are scantily planted, yet I am of opinion that shrubs alone are best. Thick planting should characterise town gardens, in order that they may present as cheerful an appearance as possible during the dull season; indeed, I consider that a stock of shrubs in pots should be kept for filling all beds which are not devoted to the growth of Hyacinths and similar subjects. It is astonishing what might be done in this way at a trifling cost. In spite of difficulties there is still a goodly collection of trees and shrubs which withstand smoke tolerably well. If plantations be now lightly hoed or forked over a considerable amount of work will be saved hereafter.

Flower Beds.—Where it is intended to form new beds for flowers or fine foliaged plants, they should be prepared at once. The soil should be taken out to a depth of 2 ft. to 3 ft., a layer of brick rubbish from 6 in. to 1 ft. in thickness should then be placed in the bottom, and covered lightly with partly decayed manure, and filled up with a mixture of soil suitable for the plants intended to be used. Towards the middle of next month, it is probable that Hyacinths and some varieties of Tulips may require support; a method of doing this, which I have found very successful, is to have stiff wires, about 15 in. in length, bent round at one end to form an eye; these can be readily inserted into the ground. I pass the matting used for tying through the eye, and tie it just under the blooms, and as the stalk lengths the wires are lifted to the required height. Such supports are much neater than small sticks, and with a little trouble the wires might be made to clasp the stems, thus dispensing with the tying. Seeds of annuals, such as Mignonette, Beet, Iberis, Carduus, Larkspurs, Love-lies-bleeding, Prince's Feather, Sweet Peas, Linums, &c., may now be freely sown. As the majority of annuals are short-lived as regards flowers, the best plan to adopt when a succession is desired, is to sow at intervals of a fortnight, the main point tending to success being, that fine seeds are not buried too deeply nor sown too thickly.

Grass should be thoroughly freed of weeds, the growth of which will soon be rapid; roll and mow frequently. Also roll and weed roads and paths as often as may be necessary; tar-paved walks which show signs of deterioration should be painted over with tar, and covered thickly with fine sea shells, sand, or other similar materials. I am confident, from long experience, that this time of the year, provided the walks be dry, is preferable to the summer time for this work. The tar should be put on hot with long-handled brushes, and the shell or other materials should be spread over the surface, before the tar has set or become dry.—CHARLES DENNIS, *Southwark Park*.

Indoor Fruit Department.

Figs.—The earliest trees will now be approaching that critical stage when the fruit so mysteriously drops—an evil at the bottom of which is the introduction of cold currents of air. When any of our fruit has dropped, we have invariably observed it to be nearest to the ventilators; moreover, none of the second crop ever falls prematurely, the weather being then warmer, and the trees hardier, hence the advice which I would give, above all else, is to avoid cold currents of air, but to ventilate freely when the outside atmosphere is soft and balmy. As the fruit approaches maturity, discontinue syringing overhead, but keep up a goodly amount of moisture by repeatedly damping down both floors and borders. If manure water be occasionally sprinkled about, it will help to prevent red spider from gain-

ing a footing, and in other ways prove beneficial. I would again repeat the oft-reiterated injunction to keep the borders well watered, and always to use tepid water.

Vines.—At the present time, perhaps the most important matter connected with late Vines, which will now be starting into rapid growth, is to be certain that the borders have had a sufficiency of water to thoroughly moisten them throughout, a not very easy matter, taking into account the long time that water has had to be withheld from them, more particularly in cases where the Grapes were left to hang on the Vines; therefore, if any doubt exists as to deficiency on this score, fork down to the very bottom of the borders in one or two places that seem likely to be the driest, and if the soil on being pressed in the hand does not adhere, then water is still required. Mulch the borders thinly with stable litter, and keep up a humid temperature of 60° in the coldest weather, and whenever it is sunny give air early, and as carefully as if for early Vines, closing up by 2.30 with a renewed application of humidity, when, if 85° are reached, the Vines will revel in the extra warmth. Disbud as soon as the best "shows" can be discerned, leaving two shoots on each spur in the case of old Vines, but one only in the case of young and vigorous ones. Those in flower, Muscats more particularly, demand hourly attention to secure a good "set." If a circulation of warm, dry air, to disturb the pollen, could at all times be maintained, artificial fertilisation would be best left alone, but as this is impossible (at all events, in spring, when biting easterly winds are the rule), it is best to resort to artificial aid, which should be used when the highest temperature has been attained. The removal of surplus bunches before blossoming rather than after that period would tend to ensure a better "set." Lateral growths should be left intact till after the fruit is set. Grapes that are stoning should be kept at as equable a temperature as possible—say 65° at night and 75° by day, declining proportionately in exceptionally cold weather. A moderately humid, ammonia-charged atmosphere should still be maintained, but as the Grapes approach the saccharine state, moisture should be gradually withheld. Supply pot Vines that are bearing fall crops with an abundance of clear manure water, which, as a matter of course, should be of about the same temperature as that of the soil, and, where there is space for development, let the lateral growths extend without restraint.

Peaches and Nectarines.—In the earliest houses the fruit will now be stoning, and the trees will for a time require little attention beyond vigorously syringing them at least once daily to prevent the advent and spread of red spider. When the weather is mild and bright, the air moisture can scarcely be too great, and plenty of this is the best antidote for spider; but in cold, sunless weather an undue amount of atmospheric humidity would be as injurious as the evil it was intended to remedy, as it would probably tend to the production of mildew. Faint-heartedness as to pulling off all fruit not intended to mature should be overcome at once, as the energy wasted in maintaining such fruit, if utilised by early thinning, would be of immense benefit to the crop. Mid-season houses will now require to be finally disbudded, and if green or black fly has appeared, it will now be safe to fumigate, but it should be borne in mind that neither the young fruit nor foliage will yet stand a strong dose; it should, therefore, be done rather mildly and on two or three nights successively. The season is too far advanced for late houses to be longer retarded, so the moment the blossoms begin to open, if the weather be cold apply fire heat and air judiciously but regularly, in order to keep up a circulation of fresh air, and this with an occasional shake of the trellis will disperse the pollen, and no other aid will be required to obtain a free set. See that inside borders are well soaked through prior to closing up the house, and if fumigation be now effectually done, probably it will not be again required—at least that is my experience in the matter.

Melons.—It is now time to sow for the principal summer crop, and, as previously advised, the seeds should be sown singly or at most a couple in a 3-in. pot, or other, that no potting off or division be required, for, however carefully this may be done, a severe check is the result. When the early plants show fruit, select about four of the finest on each plant, and fertilise at one and the same time. Some varieties fail to swell off more than one or two fruits, and the reason frequently is because they have been set at different times, and the one that has got the lead has retained it. Till brighter weather arrives apply air moisture somewhat sparingly, and also keep the bed for the present rather dry than moist.—W. W.

Hardy Fruit.

The present, as far as fruit culture is concerned, is the most critical period of the whole year, for a single night's frost may do a large amount of injury; hence the importance of adopting preventive measures to ward off frost, let the cost of labour to do so be what it may. Evergreen boughs and Birch or Hazel spray, straw, or hay bands.

netting or canvas fixed to short poles, are all handy, effective protectors for walls that have not—as walls should have—proper movable blinds. Small bushes, lines of cordons, and espaliers, can be protected in the same way as wall fruits, the labour of doing so being by no means so formidable as one might imagine. Where there are movable curtains to walls they should be kept down during bright sunshine to retard the opening of the blossoms in hopes that the advanced season may bring freedom from frost when the flowers are fully expanded, and, no matter what the weather may be, the coverings should be let down nightly, and on frosty mornings be allowed to remain down for some time after the sun shines, and during the prevalence of keen east or north-easterly winds they should also be left down. Although the weather has now become genial, the slow growth made by all kinds of fruit trees has been favourable to any planting or removal of trees that could not be done in the autumn, but it will be advisable now to defer any other such operations till next autumn, for, to say the least, the success of such late planting is rather a risky affair, success only being certain in the event of the springtime being showery, or through the pains taken to keep the roots of the trees moist by mulching and watering when such is required. Any further renovation of fruit tree borders still on hand should forthwith be completed. During the operation, all suckers or shoots that proceed from the stock should be cut off. I am at a loss to discover the cause, unless it be excess of moisture, but all fruit trees here during the last year have thrown up an unusually large amount of root suckers, Peaches especially being subject to it. We have had them all cut off, by working out the soil from about the uppermost roots, and have replaced it with fresh maiden loam, with which was intermixed a small proportion of wood ashes and bone dust, finishing with a rather thick layer of fresh stable litter. The importance of such surfacings cannot be over-estimated, and they are equally as valuable in the case of other fruits as in that of Peaches. A plot of ground should now be prepared, on which to plant out, as soon as sufficiently hardened, the earliest forced Strawberry plants. These, if the flowers be kept picked off, will produce early runners for another season's forcing, and some varieties—notably *Vicomtesse d'Haricourt* de Thury—will produce fine fruits in the autumn.—W. W.

Kitchen Garden.

Though prejudicial to vegetation, the cold north-easterly winds that have prevailed of late have been favorable to the advancement of work in this department, as without their drying effect, in many cases a suitable seed-bed could not have been obtained; as presumably such is now the fact, and that all that I term long season seeds have now been got in, the next operation will be planting out Cauliflowers, Lettuces, Cabbages, autumn-sown Onions, and the general stock of Potatoes. The earliest Potatoes will soon be above ground, and vigilance will be required to keep the soil well drawn over them till the haulm gets too high for this being done, when stable litter or Bracken shaken lightly over them will form an efficient protection against any ordinary frost. In dry weather the hoe is a great economiser of labour, and at this early season, though the weeds are barely discernable, it should be in full swing among all growing crops, such as Spinach, Cabbages, Broccoli, Lettuces, and Parsley, when it will both aid growth and destroy weeds. In the event of showery weather—for which this month is proverbial—a sharp look out for slugs will be requisite, or Cauliflowers, Lettuces, and similar plants will soon disappear. The best trap for these is bran put down in small heaps, of about a tablespoonful each, near the plants early in the morning and late at night. On this they will be found feeding, and can be destroyed. Lime, soot, and wood ashes all more or less deter them, but bran is the best remedy. It is yet rather soon to sow the general stock of Broccoli and Kale, not but what they would do best if sown now and grown on without check; but, as oftener than not they have to be planted on land that has been cropped with early Peas or Potatoes, the plants are apt to get stunted ere the ground is at liberty for them, so it is best to sow late; still the early kinds should now be sown, and also a few Savoy and Scotch Kale. We usually sow thinly in drills 1 ft. apart, and then no transplanting, other than the final one, is required.

Forcing Vegetables.—Potatoes, Carrots, and Radishes should be well aired; indeed, on bright days the lights should now be entirely off; more water will also be required, and a spindly growth of Carrots and Radishes prevented by timely thinning. French Beans in frames may be kept rather close till they begin to show flower, after which, air freely, support with linc twigs, and water liberally; a check from want of water would be the precursor of red spider. All the *Seakale* intended to be forced this season should now be covered up. Asparagus will soon be had from the open air, and no more need now be forced. Rhubarb, too, in the open air is growing rapidly, and all

coverings may now be removed from this. Sow Celery, ridge Cucumbers, Vegetable Marrows, Tomatoes, Capsicums, and Sweet Basil.—W. W.

Extracts from my Diary, April 7 to April 12.

FLOWERS.—Shifting *Verbenas* out of cutting pots and putting them singly in 3 in. ones. Boxed *Pelargoniums* for bedding. Potting *Carnation Souvenir de la Malmaison*. Getting bedding plants out of Vineries into cold pits; also *Deutzias*, *Almonds*, &c., which have been forced. Pricking out *Lobelias* and *Pyrethrums* into boxes. Sowing another batch of *Primulas*. Shifting *Chrysanthemums* which have been struck from cuttings in pot Vinery into cold pits. **FRUIT.**—Tying Cucumbers and Melons. Top-dressing Vine border with fresh loam; also Melons. Tying Peaches and Nectarines; also Figs and young Vines. Pruning and nailing Morello Cherries. Planting out Strawberries that have been forced. **VEGETABLES.**—Finishing planting the main crop of Potatoes. Sowing French Beans in pots. Sowing main crops of Parsnips, Beetroot, Carrots, and Whitloof. Making new plantation of Mint. Sowing main crop of *Leamington*, *Autumn Giant*, *Self-protecting*, *Watts' Excelsior*, and *Cattell's Eclipse* Broccoli; also main crops of Cabbages, Winter Greens, Brussels Sprouts, and Dwarf Uim Savoy.

TREES, SHRUBS & WOODLANDS.

THINNING PARK TIMBER.

INSTANCES of plantations having been neglected, or, to say the least, badly managed in the matter of timely thinning, may be seen almost everywhere. Few thin until irreparable damage is done, often not until a once promising plantation has become a tract of bare poles with a tuft of twigs on the top of each straggling up in search of sunlight. There are two chief objects for which timber may be grown, each requiring a special mode of management with a view to the best results in each case. The first is the management of timber with a view to profit; the second is its management with a view to ornament. Thinning in the first instance has to be performed very gradually, and must never be severe. The object being straight and clean trunks, sufficient room for a healthy head is all that is required without overcrowding, and the plantation should never be made so thin as to admit the prevailing winds cutting unduly through it; in short, the important matter of shelter cannot be forgotten where timber is grown for profit. But it is not with timber grown for profit that we wish at present to deal, but with ornamental or park trees as specimens; and with the production of really fine park trees thinning must be done in time and thoroughly. No one, even the most inexperienced, can fail to be struck by the beauty of trees standing out singly in a park, where they have had room to develop themselves throughout their existence without touch or shade of other trees, compared with trees of the same variety which have been only slightly overcrowded, perhaps leaning over to one side, or it may be branchless for the fourth of their height on one side. Trees of this latter sort are simply an eyesore, and it is for this reason more than any other, namely, the neglect of timely thinning, that many of our trees have a bad reputation as regards beauty. Everyone admires a well-grown Oak; or an Elm, dangerous though it be when old; or a Chestnut, which, as a flowering deciduous park tree is far before the Lime, which has long reigned as a favourite avenue tree, possibly because of its frequency on the Continent, but for which we have no special favour, but the contrary.

Again, no one will dispute the beauty of the Beech, even when its stem is bare to a great height; but for the Ash as an ornamental tree few will say a word. An old Ash, however, which has had room for fair development has a beauty peculiar to itself, altogether different from that of its stiff character when young; just as the stiff, arrow-shaped Scotch Pine gets flat and table-headed with age, so the Ash becomes pendulous when it is old enough to be a good park tree, but to arrive at this stage and to be really an ornamental object it must never have been spoiled by contact with other trees. The Birch is a tree neglected on account of a supposed want of beauty, but when old it is one of the most graceful of trees, changing its stiff, upright growth to just the reverse. It cannot be included amongst our largest park trees as single specimens, but in groups wide apart it is quite distinct and beautiful, its beauty being enhanced by its silvery-white bole shining through the

branches. It is one of those trees which quickly get spoiled if thinning has been neglected. Its branches are slender and impatient of shade, the bottom branches quickly dying off, leaving the tree a bare pole. Where specimen trees are the object, whether in groups or plantations, or where single specimens are being nursed for a time with a surrounding of minor trees, thinning must be done without delay. When the side branches begin to come in contact at the tips in some instances, as in the case of trees which have a pyramidal habit, this is even too late. We may refer to the Turkey Oak as an example of a tree which should be thinned sooner than the English Oak, as being much more liable to be spoiled from overcrowding. We have often heard the remark, "Oh! they have still some room; let them grow a little longer;" and so irresolution ends in mischief.

A great mistake is often committed by planting large trees, such as the Lime and Elm, too closely together to form groups. In a young state, what appears to be ample room is found, when the trees have only half grown, to be quite inadequate, and thinning becomes a difficulty; if it be done at all, the symmetry of the group will be spoiled, and, if left unthinned, the trees do, of course, grow into what looks a compact group from a distance; but the outside trees must of necessity become one-sided and lean outwards, while the inside trees become bare poles with a few green twigs at the very summits. The permanent trees in a plantation, if there be any hope of their ever attaining to specimen size, should never be planted nearer than 54 ft.; that space is even too little for Oaks or Beeches. I am acquainted with a plantation formed by one of our ablest landscape gardeners where the permanent trees—Cedars of Lebanon—are planted 150 ft. apart, the intermediate spaces being filled in with miscellaneous trees, to be entirely thinned out as growth progresses. Where miscellaneous plantations have been made without any preconceived plan as to thinning, or what particular tree or trees were ultimately to be permanent, it is best in the first place to select those sorts for permanent trees which seem best to suit the soil and locality, as, for instance, the Beech will be found to succeed perfectly where the Lime and Elm will not do well; the Lime will grow where the Oak will not, and the Sycamore or Norway Maple where none of these will be successful. Fortunately, the Horse Chestnut is not fastidious as to soil, which gives this fine park tree always a chance among the many. The most healthy trees in a given locality will be, as a rule, the best shaped ones, and the shape of a tree will always count a few points in its favour when it comes to the question of selection for the axe. The badly shaped tree will have to go away, provided the space left vacant by its removal is not too great, for better have a badly-shaped tree than no tree, it being only a question of time for a tree to ultimately balance itself if not hopelessly spoiled from long contact with others. Thinning may yet go on for a week or two before trees get overloaded with foliage; indeed, I have no hesitation in saying that it is never too late to thin. We have thinned young plantations all summer, or where it is absolutely necessary to relieve fine trees from being spoiled. The value of the fallen timber should never once be thought of where the well-being of the trees, left from an ornamental point, is concerned.

G. D.

Pinus insignis.—A very fine example of this handsome Californian Conifer is at present growing in the gardens at Claremont, the residence of Mr. Stephen Warren, distant about three miles from the Waltham Station of the Great Eastern Railway. The tree, which stands on the lawn, is about 40 ft. high, and beautifully furnished with branches to the ground, forming a fine symmetrical specimen, remarkable for its deep grass-green, dense, and massive appearance. This tree has apparently withstood without injury the severe and prolonged cold of the past winter. Smaller plants of this Pine, in the same garden and in other places in this neighbourhood, have likewise come through the winter unscathed, a fact which says much for the value of a dry October, as experienced last year, for ripening the wood of our more tender trees and shrubs.—ARTHUR W. PAUL, Waltham Cross.

Narcissus Bulbocodum.—This is a most useful *Dafodil* for growing in pots for the embellishment of the conservatory. We have some plants of it growing in 6-in. pots with from twenty to thirty blooms on them.—J. C., Farnborough.

CALCULATING THE HEIGHT OF A TREE.

WHEN the height of a tree can be ascertained by actual measurement, it is always best to determine it in that way, but it rarely happens, if the tree is above 20 ft. high, that this method is available without risk of injury to the tree. In most cases, the height of a tree of remarkable size has to be determined by calculation, and if the ground be clear and level around it, this calculation is very easy and requires no greater knowledge of arithmetic than the rule-of-three or simple proportion. The principle upon which all sums in simple proportion are worked is that of having three amounts given from which we have to obtain a fourth, which is the answer. We all know that the answer is certain to be right if the sum be correctly done; but there is another "if" which we must not overlook. The sum may be correctly worked, but the height of the tree will not be right if there be any mistake in either of the three amounts given to you. In order to be accurate in the determination of the height of a tree, it is necessary to be fully alive to the different ways in which mistakes may arise in one or all of the three measurements from which the height has to be calculated. There is only one way of obtaining this knowledge, and that is by clearly understanding the principle upon which the calculation is worked. This we will endeavour to explain in language as simple as possible, aided by a few engravings.

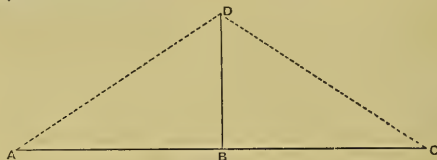


Fig. 1.

With a 2-ft. ruler and a lead pencil draw a straight line as has been done at *A B C* in fig. 1; let this line be 12 in. long, and make a mark at *B* half-way along; the point *B* will then be 6 in. from *A* and 6 in. from *C*. Now draw an upright line from *B* to *D*, and make this line of any length, say 5 in. long. If you have done this correctly, the distance from *A* to *D* (along the dotted line) will be the same as the distance from *C* to *D*; but if the length of the two dotted lines be not exactly the same, the line *B D* must be wrongly drawn; in other words it is not upright.

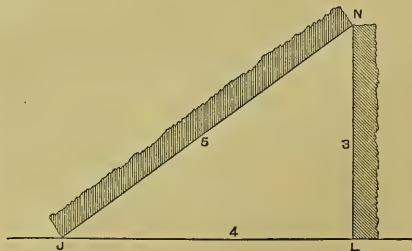


Fig. 2.

A ready way of drawing one line upright to another is that which carpenters call the "3, 4, 5" method, and this is shown in fig. 2. Draw a line *J* to *L*, and make it 4 in. long; cut two strips of stiff paper, one 3 in. the other 5 in. long; lay one end of one strip at *J*, and one end of the other strip at *L*, and you will find that you can make the other ends of the strips meet at *N*. If a line be now drawn from *N* to *L*, it must be upright on the line *J L*.

We will next suppose that we have, in fig. 3, the line *L M* drawn about upright to *J L*, and that we wish to prove whether it is really upright or not. In order to determine this, the line *J L* must be halved, and each half halved again, whereby we get it divided into four equal parts. Now carry on the line *L M* towards *N* until the distance from *L* to *N* is equal to three

of these parts. Lastly, measure the distance from J to N , and if that distance be equal to five of those parts then the line LX is perfectly upright.

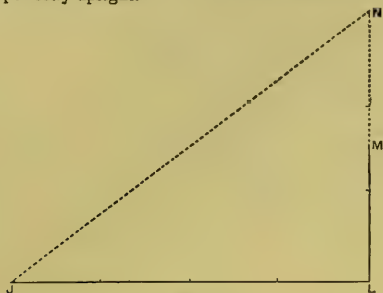


Fig. 3.

Having thus, as we hope, made it clear what is meant by an upright line, how to draw one correctly, and how to ascertain whether a line is upright or not, we propose in future to call every upright line a perpendicular, that being the word commonly used by those who have to deal with heights and their measurements. They also call the line upon which a perpendicular is drawn the base line.

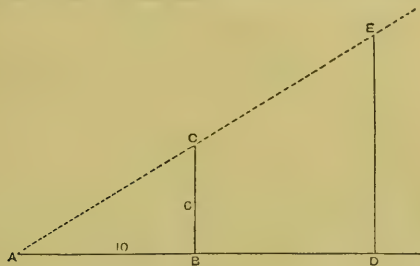


Fig. 4.

Upon fig. 4 is a line BC , which is perpendicular to AB . If the dotted line from A to C be carried on in the direction of E , and if the base line AB be also carried on in the direction of D , and if another perpendicular line be drawn anywhere along the line ABD , as, for instance, at D , the length of each perpendicular line will be in proportion to the length of its own base line; in other words, the base line AB is to its perpendicular BC as the base line AD is to its perpendicular DE . In the figure AB is 10 and BC 6; if, therefore, AD is twice 10, DE must be twice 6, and so on.

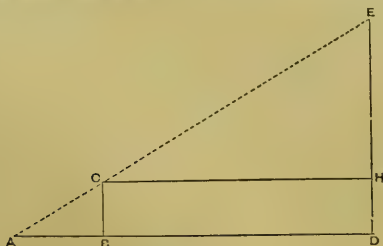


Fig. 5.

Let us now go a step further and look at fig. 5. It is a repetition of fig. 4, with an additional line CH , the distance from D to H being the same as from B to C . We already know that as AB is to BC , so is AD to DE , and we need not there-

fore stay to prove, what must be evident at a glance, that the same proportion must also exist between the base line CH and the perpendicular HE . If any one should doubt it he has only

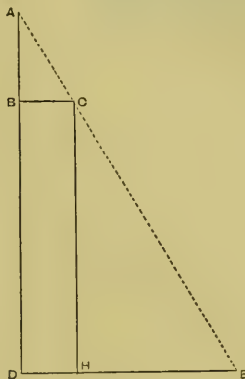


Fig. 6.

to turn fig. 5 on one side, as at fig. 6, whereby base lines and perpendiculars change their names, and he will see that base line EH is to perpendicular HC , as ED is to DA , or as CB is to BA .

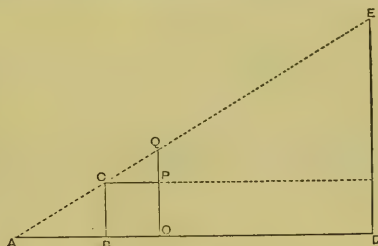


Fig. 7.

In fig. 7 will be found a third perpendicular OPQ , of course bearing the same proportionate length to that of its base line AB as the others bear. It will be unnecessary here to go over the same ground again in order to prove that we are correct in asserting that the base line CP is to the perpendicular PQ as the base AD is to the perpendicular DE .

Let us now proceed to apply this knowledge of proportions to the practical use which is our object in view, and in order to keep to simplicity as far as possible in our explanations, we will retain the same letters in our future illustrations as heretofore used. Provide two light poles, each with a pointed end, and of such lengths that when stuck firmly into the ground one shall be just 5 ft. high and the other 10 ft. high. Another plan is to fasten each pole into a square piece of thick plank in which it stands upright. In either case, the poles when used must be of the proper height and be placed perfectly upright, and this must be ascertained by a string and weight. In fig. 8, the 5-ft. pole BC is 6 ft. away from the 10 ft. pole OPQ , and upon looking from the top of the shorter pole to the top of the longer one, we see the top of the tree DE in the distance. Now the proportion which we have to work out is this: as CP is to PQ , so is CR to RE ; we can measure the first three of these terms in the proportion and from them calculate the last term. The first term CP is the distance between the two poles, which is the same as BO , or 6 ft. The second term PQ is the difference between the heights of the two poles, namely 5 ft. The third term CR is the same as BD , being the distance of the shorter pole from the tree trunk, which by

measurement we find to be 24 ft. Our sum therefore, is—as 6 is to 5, so is 24 to the height from *x* to *z*. This works out 20, and if to this we add 5, being the height from *d* to *x*, we find the whole height of the tree to be 25 ft.

But if either of these poles should happen to have been out of the perpendicular this calculation would be wrong. In the next figure (No. 9) it will be noticed that the 10-ft. pole is not upright, and that the distance between the poles, measured on the ground, is $7\frac{1}{2}$ ft. instead of 6 ft. If this error had not

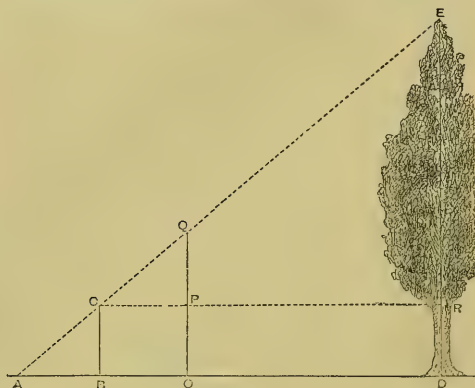


Fig. 8.

been detected the sum would have been stated thus—as $7\frac{1}{2}$ is to 5, so is 25 to the height from *x* to *z*. This works out 16, and, after having added to this 5 (the height from *d* to *x*), we should have wrongly stated the height of the tree to be 21 ft., or 4 ft. less than the true height.

It is not often that trees having the kind of outline sketched in our figures up to this time are much out of the perpendicular; indeed, the very fact of their being so would generally prevent our taking sufficient interest in them to care to

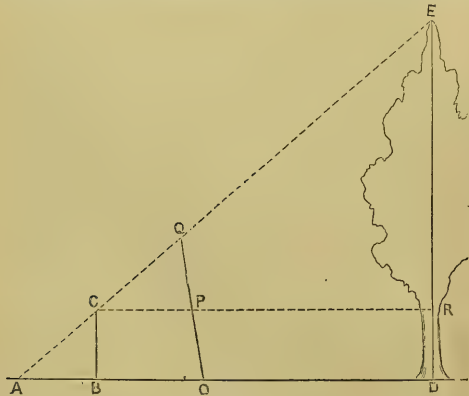


Fig. 9.

know anything about their height. But with trees of a more branching habit it is very frequently the case that the highest point or branch is not over the stem, and, as far as we are concerned in the matter of determining its height, this is just as bad as if a Poplar had grown diagonally instead of upright.

In cases such as that indicated in fig. 10, it will be necessary to stick an umbrella or walking stick or other mark into the ground immediately under the highest point, as nearly as can be guessed, and then to check the correctness of its posi-

tion by walking away from the tree in various directions, and observing whether the umbrella always appears to be under the highest point. If it does not, its position must be shifted until it appears to be correctly placed.

In fig. 10, the distance from *B* to *D* is found to be 19 ft., and from *B* to *O* is 6 ft., while the difference between the heights of the two poles is 5 ft. as before. Therefore the proportion is as 6 is to 5 so is 19 to the distance from *x* to *z*, which works out 15 ft. 10 in. Adding to this the height *d* *x*, which we know to be the same as *x* *c*, that is 5 ft., we determine the highest point of this tree to be 20 ft. 10 in. from the ground. It must be evident, from a mere glance at this fig., that if any one had failed to notice the fact of the highest point not being immediately over the middle of the stem, the ground distance would have been measured from *B* to the tree instead of from *B* to the umbrella, hence the third term of the proportion would have been wrong, and the result would have been that the calculation would have shown the tree to be about 3 ft. higher than its highest branch.

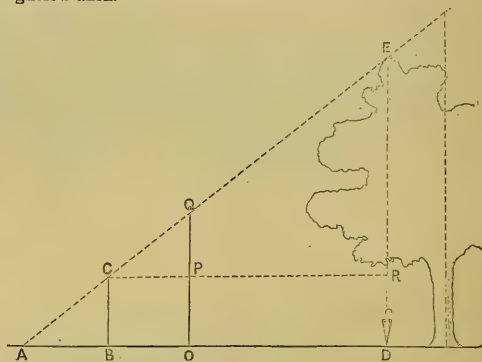


Fig. 10.

Up to this point, we have been dealing with vertical irregularities, showing their effects upon the calculations, and how to find them out and correct them. In the concluding portion of this paper we shall treat of horizontal irregularities. W.T.

THE CALYCANTHUSES.

THE deliciously-scented blossoms of the Carolina Allspice and some of its varieties make them very desirable shrubs, and their size and compact habit alike recommend them, even in gardens where only the more select shrubs are grown and room is a first consideration. All the kinds are quite hardy in this country, and, with the exception of the Western Calycanthus, do not seem at all particular as to the position or soil in which they are planted. In the north of England and elsewhere I have seen them luxuriating even in strong clay, and in the south they appear nearly as much at home in a dry, gravelly soil, though in somewhat sheltered and shady spots. In the peat border, along with American plants and shrubs especially requiring a peat soil for their successful cultivation, they thrive admirably, although, as previously stated, such conditions are not absolutely necessary. They seem to attain a maximum degree of development in good rich soil, where a tolerably uniform amount of moisture obtains. Young shoots, layered in summer, make roots readily, and layering is the most easy and expeditious mode of obtaining a stock of these charming shrubs.

The Carolina Allspice (*Calycanthus floridus*) is the kind which has been the longest known in English gardens, having been introduced by Catesby in 1726. It, however, seems to have remained very rare for a quarter of a century, when fresh importations were made by Collinson. In a letter written by the latter to Linnaeus, bearing date May 12, 1756, he says, "It is a charming *Suffrutex*, and grows in my garden in the open air, bearing flowers abundantly every year." It forms a dense, round bush, has opposite, shortly-stalked leaves,

and lurid purple powerfully aromatic blossoms, borne singly on short stalks at the extremity of the branches, which, as well as the roots, have, when bruised, a very decided smell of camphor. The blossoms, when crushed, exhale more or less a fragrance of Strawberries, or, according to some, of ripe Quinces or Apples. In the typical plant, which in a state of nature is found in rich soil on hillsides in Virginia and southward, and flowers from May until August, the leaves are oval, and softly downy beneath; fruits are but rarely developed. Under favourable conditions this species will attain a height of 6 ft. or 8 ft. Several varieties, some of which have at various times been regarded as species by different botanists, are to be seen in botanical and other establishments. The principal of these are:—

OVATUS, a form with roundish-ovate leaves.

OBLONGUS, a variety with oblong leaves.

LONGIFOLIUS, in which the foliage is much longer than in the type.

MICROPHYLLUS, in which, as the name implies, the leaves are much smaller.

NANUS, a compact-growing dwarf variety.

INDORUS, a sport with flowers almost or quite scentless.

There is also a form with variegated foliage, known as *VARIEGATUS*; and another, *ASPENIFOLIUS*, with cut leaves.

The *Glabrous-leaved Calycanthus* (*C. lavigatus*) is found on the mountains of Pennsylvania, Virginia, and Carolina, and flowers from May to August. It has rather wrinkled, oblong or ovate, gradually taper-pointed leaves, rough to the touch on the upper surface, and smooth and green on the under. The blossoms, which are hardly sweet-scented, are of nearly the same lurid purple colour as those of the preceding kind. *C. ferax* and *C. pennsylvanicus* are names under which this is sometimes found in both books and gardens.

The *Glaucous-leaved Calycanthus* (*C. glaucus*).—The large, conspicuously taper-pointed, somewhat lance-shaped leaves of this kind distinguish it well from the foregoing; they are flat, green above, and of a decidedly whitish-grey tinge beneath. The almost scentless blossoms are less deep in colour than those of the Carolina Allspice, from which they differ in being frequently fertile. It is found on the mountains in Virginia and southward. In some books it is described as *C. fertilis*.

The *Western Calycanthus* (*C. occidentalis*) is a much larger shrub than, and totally different in habit and general appearance from, the others. It is handsome in growth and foliage, and especially so in the large size and bright colour of its blossoms, which are 3 in. or more in diameter, and of a somewhat bright purplish-red colour. It was sent by David Douglas from California to the Royal Horticultural Society's Gardens in 1831. It is perfectly hardy, but a warm, sunny spot or a wall singularly favours the ripening of its wood and, consequently, the production of its beautiful flowers, which, however, totally lack the delicate scent peculiar to some of the kinds, or, to speak more correctly, are destitute of any scent whatever. The leaves are large, 5 in. or 6 in. or even more in length, heart-shaped at the base and somewhat taper-pointed, shining green on both upper and under surfaces. This is known in some gardens as *C. macrophyllus*, and flowers from the end of August to October. G.

WOODLAND WORK FOR APRIL.

WHATEVER spaces have to be filled up in woodlands should now be furnished as quickly as possible, both as regards deciduous and coniferous trees. The main point to attend to now is quick removal, allowing no plants to remain out of the ground longer than is absolutely necessary. The grafting of trees may still be continued, the Fulham and Lucombe upon the common Oak and the rare and variegated kinds of Maple upon the Norway Maple and the Sycamore. Dry and frosty weather in April is a good time for removing the dead branches of the Larch, Spruce, and Silver Fir. The operation is best performed by dealing them a smart blow with a heavy stick or mallet, which loosens and withdraws the bolt-like insertions so injurious to the converted timber. The pruning and trimming of all evergreen shrubs and hedges should be finished up and large plants brought from the nursery to fill up gaps. Hollies and Yews, the Hemlock Spruce, Portugal and common Laurel, and the Box may now be safely removed as strong plants 3 ft. high, but they should have been previously transplanted in the nursery so as to have secured for them plenty of bushy, fibrous roots. In removing at this season of the year large plants which stand singly in a dry soil a good watering round the roots, followed by a thorough ramming or beating of the soil, will enable the transplantor to remove them with a solid ball. This is a favourable time for sowing Grass seeds upon wood rides or for game cover in open corners of the woodlands. For rides I have found the following mixture suitable:—Timothy, tall Fescue, Meadow Foxtail, and hard Fescue, 2 lb. of each; rough Cockfoot and smooth-stalked Meadow, 3 lb. of each; sweet-scented

Vernal and rough-stalked Meadow, 4 lb. of each; wood Meadow Grass, 7 lb. Prepare the ground and sow Whin or Furze seeds either for hedges or for game covert. Hedges of this plant should not be trimmed until towards the end of June. Also plant cuttings of Osiers for the use of the basket maker. Choose land near a stream, so that water may be admitted into the open intermediate ditches or shut out at pleasure by means of sluices. Cuttings of 12 in. or 14 in. long, from branches of two years' growth, may be planted in rows from 18 in. to 3 ft. apart, and from 18 in. to 2 ft. between the cuttings, according to the growths of the various kinds and the ages at which they are intended to be cut. These cuttings should be inserted about two-thirds of their length. The ground intended for Osiers should be well trenched, liberally manured, and thoroughly cleaned. If the weather is mild seedling evergreens should be lifted by the middle of the month, never taking up more than can be planted again the same day. Scotch Pines (two years' seedlings) may be planted in rows 12 in. apart and 3 in. between the plants; the land should be in good condition, in which case, at the end of another year, they will be fit for planting out permanently. Strong Spruces of two years old or weaker ones of three years may also be removed. If planted in a rich, humid soil, they will make great progress. If intended to remain two years in the lines give them spaces of 12 in. by 6 in.; also transplant two-year Silver Firs; these will require more space than the Spruces. The Pinaster and Stone Pines should be planted out in lines as one-year seedlings, otherwise they become too tall and slender; sandy loam suits them well. Considerable care is required in lifting the Stone Pine on account of the length of its roots. Two-year seedling Hollies may be planted, 5 in. or 6 in. apart, in situations shaded from the midday sun; these, as well as the Yew, flourish in a rich sandy soil. The cones of Firs and Pines, where still unopened, should now be placed upon a hair sieve on a kiln and subjected to a heat of not more than 112° Fahr.; if necessary, they may afterwards be threshed and then sifted. The Silver Fir, Balm of Gilead Fir, and Weymouth Pine yield their seeds with very little trouble, but the Larch, Scotch Pine, and Spruce generally require more attention. Finish sowing all seeds of the Coniferous kinds, and protect from frosts beds of young plants, particularly in situations where the morning sun may strike them while in a frozen state. Mark as soon as possible all Oaks intended to be felled this season, and make preparations for the bark stripping, of which I will give some account later on in the month. A. J. BURROWS.

Oak Timber.—Much of the oldest Oak Timber in this country is not of the same kind as that now in use. What we call Oak timber now is the wood of the *Quercus pedunculata*. This has its fruit stalked and its leaves sessile. The other Oak, the *Quercus sessiliflora*, has its fruit sessile and its leaves stalked. This latter is the Oak which furnished timber to some of our oldest buildings—to St. Alban's Abbey and to Westminster Hall. The old wood is so unlike our modern Oak timber, in the absence or indistinctness of the silver grain, that it was long considered to be Chestnut.

Convolvulus Cneorum.—The fine specimen of this highly ornamental shrub, which was the source of so much attraction at Kew during the last and previous seasons, has unhappily fallen a victim to the cold of last winter. A considerable number of other South European shrubs have unfortunately also shared the same fate, a fact which a glance at the walls and arboretum at Kew will fully confirm. As, however, it is of tolerably rapid growth, those who have sustained the loss should not be discouraged, but should plant again. —W.

Choisya ternata.—It is gratifying to find that this handsome Mexican shrub has withstood the exceptionally severe winter through which we have passed with only the protection of a wall. It cannot be too highly recommended for general culture, as even when not in flower it is a fine evergreen. An idea of its beauty when in bloom may be gleaned from the coloured illustration of it which appeared in THE GARDEN, Vol. XII., p. 232. —W.

Straightening Trees.—One may not be able to quite straighten trees that are crooked, but, nevertheless, their appearance may be greatly improved by the following operation:—Make two or three longitudinal incisions on the inner side of the bend, and repeat this several times during the summer; it will increase the formation of wood on that side. I have seen this result with trees from 2 in. to 4 in. in diameter, the trees being left almost straight. —“Cultivator.”

Clintia carneus.—So far as I am able to see, this is the only plant killed in our garden by the late severe winter. It was growing against a south wall, and was never protected. Plants of it in a cool greenhouse will soon be in great beauty, and, with protection of this kind, few flowers are more showy at this season of the year. —CAMBRIAN.

WOODLAND GARDENING.

THIS kind of gardening is now becoming interesting. Many subjects that have long lain dormant are now bursting forth into leaf and flower from under the covering of dry leaves or decayed stalks, which it is always advisable to allow such subjects as deciduous Ferns to bear, as they not only protect the crowns but preserve the roots from frost. Many plants found to winter quite safely under such conditions suffer severely in bare flower garden beds. Our woodland garden here is a dell overhung on the north by a steep, almost precipitous bank that shelters the occupants from the cutting blasts that blow from that quarter. Winding flights of steps roughly cut in the bank lead down into it from the dressed grounds, and here, under the shade of overhanging trees, on which Ivy, Mistletoe, and wild Clematis are allowed to ramble at will, may be found an agreeable resort at all seasons of the year. Clumps or irregularly formed beds of flowering, deciduous, or evergreen shrubs, are dotted about without formal design, and old, Ivy-clad stumps of trees form a rookery nearly hid from view by a covering of hardy Ferns, Cotonasters, Periwinkles, and Euonymus. At the present time Primroses quite carpet the turf with an endless variety of colours, the remnant of the named varieties being planted here indiscriminately after the beds in the flower garden are planted, and, as they seed freely, the result is a mixture of all shades of colour. Polyanthes, Oxlips, and Cowslips are just coming into flower, while Snowdrops and Aconites are getting over. Crocuses of many kinds are, however, abundant; here, too, Narcissi, Jonquils, and Daffodils find a congenial home, and wood Anemones and single Violets flourish both on bank and dell. The only drawback is that mice eat the Crocus bulbs, especially such as are freshly planted. The beauty of a wild or woodland garden depends very much on the position which it occupies; anyone having an old quarry or gravel pit, or any kind of irregular surface may soon convert it into a pleasant and interesting resort by adding from time to time hardy plants that will never fail to produce effective flowers. In level districts a worn out orchard might be utilised in a most interesting way; the old stumps might be made to support climbing plants, and by letting the hedgerow grow wild, a screen would be produced that would afford shelter, and that would at the same time shut out from view other portions of the ground. J. GROOM.

Ice Storing.—"C." (p. 261) persistently endeavours to charge me with what I never uttered. I am made to advocate a thick column of straw. This is a misrepresentation; I never used the word "thick." My central column of straw was in bulk little more than that of a draining pipe, and as for its being a channel for heat, where is the heat to come from in a vault wholly underground? My sketch of an ice well or cellar, as regards shape, was merely imaginary, or, at least, not absolutely correct, and was only intended to show the method of applying the drainage; a scale or dimensions was never meant. I have said, and still maintain, that the best place for storing ice is a vault or cellar wholly underground, and such places may be three or four times as wide as high, provided they be deep enough from the effect of vertical heat. I will also mention that it is infinitely preferable to take the ice from an aperture at the top of the cellar the same as water is drawn from a well, and not from a door or aperture at the side, which is about the best method that could be devised for admitting heat and air to the cone of ice. Now, let me answer "C.'s" questions briefly. I am described as furnishing an argument against myself concerning central drainage. When I said that "water poured on the top will almost be immediately congealed and will never scarcely percolate to the bottom," I stated what was true, but "C." should remember this was during frost; and now for another question. "How do I reconcile this statement with having seen ice with water standing on the top as in a bowl?" Let me here remind "C." that this was at melting time; certainly not simultaneously. "C." says "he never witnessed such a phenomenon;" probably not, nor yet others who stack ice in the shape of Cleopatra's Needle. But I must again "theoretically and practically" assert that a mass of ice in a vault of whatever shape, if broader than high when the opening is at top, has a tendency to only melt at the top, and to become dish or bowl-shaped under the opening, and that the sides of such places, being farther from air and solar influence, are as cool as the centre, and it is a totally different circumstance from an upright body of ice, having a door at the side to let in heat and with a side wind.—T. WILLIAMS, Ormskirck.

NOTES FROM KEW.

Hardy Plants.—Each successive week at this season of the year brings to our notice fresh objects of interest, and amongst the most noteworthy now in flower is the Persian Iris (*Xiphium persicum*), introduced as long ago as 1627. Though not so beautiful as the Netted Iris (*X. reticulatum*), it presents a more striking contrast in colour, the three spreading falls being creamy-white heavily blotched with the deepest purple at the tips and copiously spotted on the lower half relieved by the bright orange crest, and the inner sides of a delicate porcelain-blue tint; the upright petals or standards are reduced to mere scales. It moreover yields an agreeable odour. Like its congeners, it is perfectly amenable to pot culture, and it will also succeed in Hyacinth glasses. Another charming bulbous plant is Nuttall's Erythronium (*E. Nuttallianum*), a yellow-flowered kind, much in the way of *E. americanum*, with similar bright yellow blossoms, having reflexed petals and reddish stamens, but lacking the marbled foliage of the latter kind, and it is technically distinguished by the absence of the very small ear-like processes at the base of the petals, as seen in all the other species. That beautiful old favourite the Dog's-tooth Violet (*Erythronium Dens-canis*) should be accommodated in every flower border, as it is amongst the earliest of spring flowers. Amongst Drabas, which are pretty rock plants, belonging to the Crucifer family, the best is *D. bruniaefolia*, a rather scarce kind, and a native of the Caucasus. It forms dense, cushion-like, bright green tufts, studded profusely with small golden blossoms. The yellow Alpine Whitlow Grass (*D. aizoides*), one of our rarest wild flowers, is remarkable for its bright yellow blossoms and glossy leaves, margined with hairs produced in rosette-like tufts. *D. cuspidata* much resembles the last, but is smaller and looser in habit. Another desirable Crucifer is the many-leaved Coral-root (*Dentaria polyphylla*), which inhabits various parts of Central Europe. It grows about 6 in. high, and has leaves arranged in threes, each divided into four pairs of leaflets. The flowers, which are large and creamy white, are produced in many flowered terminal clusters. Turning to the Borage family, which yields so many fine border flowers, we notice the early flowering Oriental Borage (*Borago orientalis*), a kind with a spreading habit and ample foliage, producing abundance of clusters of violet-coloured blossoms, the petals of which reflex as in a Cyclamen. The majority of the kinds of Comfrey are gigantic in stature and coarse in habit, but the Iberian Comfrey (*Symphytum ibericum*) is interesting on account of its growing only a few inches high; it has small, deep green, heart-shaped leaves and drooping clusters of yellow blossoms, which are about the size and form of those of *Oenothera lutea*, but are red before expansion. This is an excellent plant for a rockery or front row of an ordinary border, as it apparently thrives equally well in both situations. Some of the charming alpine Primulas are finely in flower, and amongst them the Fairy Primrose (*P. minima*), one of the smallest of the family. It has rosettes of small wedge-shaped leaves, beset with sharp teeth at the tips. The flowers are large for the size of the plant, being nearly 1 in. across, and rose-coloured. It inhabits the mountains of South Europe. The Entire-leaved kind (*P. integrifolia*) is another gem; it has glossy leaves, and white-eyed rose blossoms as large as a shilling. *P. Dinyana* is another diminutive species; it has viscid, slightly-toothed leaves, and rich purple blossoms borne in clusters on short stems. The Himalayan *P. denticulata*, with its numerous shades of purple flowers, is also well represented, and some appear to be distinct enough to merit varietal names.

Hardy Shrubs.—Both walls and shrubberies are enlivened just now by the bright golden blossoms of the Drooping Forsythia (*F. suspensa*), a Chinese shrub of singular beauty. Its slender, gracefully drooping branches are covered with flowers, which last in good condition for a considerable time. Though it is perfectly hardy and succeeds well in a shrubbery, it is seen to best advantage when planted against a wall. Not so, however, *F. viridissima*, which is also in flower; its habit is stiff and formal, and therefore it is best adapted for forming isolated specimens, or interspersed with other shrubs. *Cornus Mors*, a European shrub, covered with heads of small yellow blossoms, is also attractive, and so are also the several varieties of that most desirable shrub the Mezereum (*Daphne Mezereum*). Standish's Honeysuckle (*Lonicera Standishii*) is very sweet scented, and on that account, as well as because of its early flowering, it merits a place amongst hardy shrubs.

Stove Plants.—By far the most attractive object in the Palm House is the East Indian Asoca (*Jonesia Asoca*), a shrub belonging to the Pea family. It grows several feet high, has handsome pinnate foliage, and possesses the peculiarity of producing its clusters of blossoms, which are orange when first expanded, changing to bright scarlet, both on the naked branches and young shoots. The Scarlet Brownea (*B. coccinea*) is another striking plant; it bears dense clusters of rich scarlet flowers in the same remarkable manner as the

Jonesia. It inhabits various parts of the West Indies. *Sinningia Youngiana*, a Gesneraceous plant, very similar and nearly related to the ordinary *Gloxinia*, is a very handsome stove plant, with large, ovate leaves and rich purple blossoms. It is said to be a hybrid between *Ligeria speciosa* and *Sinningia velutina*. Amongst the *Bromeliads*, *Libon's Billbergia* (*B. Liboniana*) well merits a place in every stove. It is of medium size, with Pine-apple-like foliage, from which arise several flower stems bearing long tubular blossoms with scarlet calyces, and corolla white in the lower half, and deepening to rich purple at the tips. It was discovered in the environs of Rio de Janeiro several years ago by M. Libon. *Alpinia bracteata* is a handsome member of a much neglected family formerly known as *Scitamineæ*. It grows about 5 ft. high, has broad, Maranta-like foliage, and produces terminal spikes of rather large white blossoms heavily pencilled inside with cinnamon red. It is of Chinese origin, and an old inhabitant of stoves.

Greenhouse Plants.—Amongst these, one of the most interesting now in flower is the little trailing *Sarmienta* (*S. repens*). It has numerous slender, trailing branches, with opposite, small, roundish leaves, slightly toothed at the tips, and from the axils of which are produced bright red blossoms, about 1 in. long, urn-shaped, with protruding, yellow-tipped stamens, the whole plant reminding one of *Mitraria coccinea*. It is admirably adapted for growing in a suspended basket or pot, and, being a native of the cool districts of Chili, it should be grown in a cool, moist greenhouse or frame partially shaded. The *Asarum-like Heterotropa* (*H. asaroides*) is a curious Japanese plant, and a member of the *Aristolochia* family. In foliage it strikingly resembles *Cyclamen europæum*, having the same heart-shaped leaves and beautiful variegation. The flowers are hidden by the foliage, but, as they are more singular than beautiful, that is not so much to be regretted. Some of the Cape Irids are very useful decorative bulbous plants. The old *Synnotia bicolor* has Iris-like foliage, from which arise stems bearing flowers of a creamy-white, the lower petal being purple with a grooved crest of yellow. *Sparaxis grandiflora* and *tricolor* are also desirable, the former producing large white blossoms striped with purple on the outside; the latter flowers with almost every intermediate shade from bright red to orange. *Styphelia tubiflora* is a very ornamental, erect-branching plant, very similar to an *Epacris*. Its narrow, tubular flowers are of a rich carmine tint, the petals being beautifully fringed with the same coloured hairs. It is a native of New South Wales. W.

NOTES OF THE WEEK.

Rhododendron Aucklandi.—In a rocky corner of my winter garden a little tree of this *Rhododendron* is now bearing seventy-three trusses of flowers, each truss containing from seven to nine large blossoms. I cannot understand why this most beautiful species is so seldom seen in cultivation. When well treated and fully established it is very free flowering, and its waxy-white blossoms, which are slightly veined with rose, are deliciously perfumed.—O. F., Augsburg, Bavaria.

Seedling Hepaticas.—We have received from Messrs. Rodger, McClelland & Co., of Newry, blooms of a seedling form of *Hepatica trilobata* called *superba*. It is larger than the ordinary kind, has rounder petals, and is also different from the type in colour, which is of a bright and beautiful shade of rose.

Brownea grandiceps.—This is said, by the "Irish Farmers' Gazette," to be now in full flower in the large stove conservatory at Glasnevin, and to be a sight worth seeing. It is furnished with upwards of fifty of its gorgeous flower-heads, which, set off to advantage by the dark pinnate foliage, are most effective. In an intermediate house adjoining, *Solandra grandiflora*, which covers a considerable portion of the roof, has been for weeks and is still very striking and noteworthy, producing in profusion its great trumpet-shaped white flowers, which in size and form much resemble those of the white *Begonia*, but instead of hanging perpendicularly, like those of the latter, they stand out horizontally from the stem.

Orchids at Holloway.—Now when the stately species of East Indian Orchids do not receive so much attention as they once did and still deserve, it is refreshing to meet with a thoroughly well-grown collection, such as that in the Victoria Nursery, Holloway. *Vandas* especially, which are too often found with bare stems, may be seen here in quantity, with arched leaves perfect down to the pots; the different forms of *V. suavis* and *V. tricolor* alone are pushing up some fifty or sixty flower-spikes, several of which are already beautifully in bloom; one in particular, *V. tricolor formosa*, has petals and sepals in the case of newly-formed expanded flowers, quite flat and heavily spotted and diffused on the margin with deep

purple. Here also is an immense mass of the scarce *Odontoglossum Londeborghianum* some 3 ft. by 2½ ft. across, newly imported but in excellent condition. From what has been seen of this *Odontoglossum* in the shape of the few plants which have bloomed in this country, it is a magnificent addition to this already rich genus. If, as has already been stated, it comes from the same district as *O. citreum*, it may be expected to thrive under like conditions, i.e., not too hot but still enjoying more warmth than the generality of *Odontoglossums*.—P. G.

Hardiness of *Habenanthus pratensis*.—This is now coming up strongly in my garden, having stood through the winter without any protection. This fine plant may therefore be considered perfectly hardy, as the frost must have penetrated far below the position of the bulbs.—J. G. N.

Orchids at St. John's Wood.—The following Orchids are now in flower in Mr. F. A. Philbrick's collection at St. John's Wood, viz.:—

<i>Angræcum sesquipedale</i>	<i>Dendrobium litiflorum</i>	<i>Odontoglossum Rossi-</i>
<i>Ada aurantiaca</i>	<i>Devonianum</i>	<i>majus</i>
<i>Celogryne cristata</i>	<i>Cymbidium</i>	<i>Cervantesi</i>
<i>Cattleya Harrisoniæ</i>	<i>Findleyanum</i>	<i>Cervantesi decorum</i>
<i>Trinæ</i>	<i>crepidatum</i>	<i>Oncidium ceculatum</i>
<i>Citrina</i>	<i>Pierard</i>	<i>janicidum</i>
<i>Cypripedium villosum</i>	<i>Lælia superbiens</i>	<i>Phalænopsis Casta-</i>
<i>Argus</i>	<i>anceps</i>	<i>anabilis</i>
<i>barbatum</i>	<i>Lycaste Skinneri</i>	<i>grandiflora</i>
<i>biflorum</i>	<i>Masdevallia lizea</i>	<i>Schilleriana</i>
<i>Dayanum</i>	<i>Odontoglossum Alexan-</i>	<i>Sophronia grandiflora</i>
<i>Dendrobium nobile</i> , several varieties	<i>dræ</i>	<i>Vanda euisi Velitchi</i>
<i>elegans</i>	<i>pulchellum majus</i>	<i>suavis Kollaseni</i>
<i>Wardianum</i>	<i>roseum</i>	<i>tricolor superba</i>
<i>crassinode</i>	<i>Phalænopsis</i>	<i>tricolor insignis</i>
<i>crassinode</i>	<i>cinthosum</i>	<i>gigantea</i>
<i>Barberi-</i>	<i>Pescatorei</i>	<i>cærulescens</i>
<i>anum</i>	<i>nebulosum</i>	
<i>Freemant</i>	<i>nebulosum pardianum</i>	

Pansies.—Notwithstanding the severity of the weather, until within the last few days Pansies are beautifully in flower in several places. We have just seen some fine blooms of both fancy and other kinds from Mr. Hooper's garden, at Widcombe Hill, Bath. They were named kinds, the best of which were John Darke, J. T. D. Llewellyn, Rev. J. Phelps, all rich dark shades of red; Sir William Wallace, yellow blotched with maroon; G. F. Wilson, a finely formed fancy kind; White Clipper, white blotched with bluish-purple; and William Goodchild, pale blue blotched with black. Several others were also equally good.

Hardy Plants in Bloom in the Newton Nurseries, Chester.—Notwithstanding the severity of the winter, and the bitter east winds which we have experienced of late, we have a fair amount of Alpines and the earlier bulbous plants producing quantities of bloom. A fine bed of *Bulbocodium vernum* has been producing its lovely purple flowers for the past three weeks, also a few plants of its variegated variety. Crocuses are nearly out of flower; a few of the best are *Imperati*, *Sieberi*, *biflorum*, *Auberi*, and *asiaticum*. Some half-dozen beds of the Dog's-tooth Violet (*Erythronium Densa-canis*) will, with the aid of a few sunny days, be a mass of rosy-lilac flowers. *E. Densa-canis* album is now in flower, and some plants of *E. giganteum* are throwing up some fine spikes. Despite the cold, *Iris reticulata* has never ceased to produce its lovely violet-scented blossoms. *Saxifraga oppositifolia* and its varieties are also still well in flower; some tufts about 1 ft. in diameter being a mass of bloom. *S. Burseriana* and *S. juniperica* are still in blossom, the latter having bright, golden, tassell-like flowers borne on short erect stems, 3 in. in height. On a fine plant of the mauve-coloured *Hepatica angulosa* I counted upwards of 100 flowers. Anemone ranunculoides opened its first blossoms to-day (April 2); they are of a bright yellow colour. The Utah Agave has proved to be perfectly hardy, having withstood the winter on the rockwork here. We have *Primula rosea*, *P. cashmeriana*, and *P. capitata*, all finely in bloom; the two latter are of the *P. denticulata* section, and on the under sides of their leaves is a golden farina. *P. spectabilis*, rosy-lilac; *P. nivalis*, pure white; and *P. marginata*, mauve, are now also in flower.—E. J.

Hardiness of *Fortune's Gardénia*.—Mr. Scott, of Auchen-dennan, has recently discovered by accident the hardiness of *Gardénia Fortunei*. A plant of this fine shrub, about 3 ft. high, and growing in a 10-in. pot, was thrown on to the rubbish heap. Six weeks afterwards, when the ground was bound hard with frost, and the foliage of plants all around was drooping, the plant of *Gardénia* was discovered, and was found to be the freshest evergreen about the place, although the ball was frozen through.—"Florist."

At the Royal Horticultural Society's show last week, Mr. Wills was awarded two gold medals; one for a group of plants arranged for effect, and the other for new and rare plants.

ANSWERS TO CORRESPONDENTS.

Æschynanthus grandiflorus.—*Anon.*—This requires a stove temperature and plenty of water in order to obtain free growth, without which free blooming cannot be expected.

Fuchsia Dominicana.—*Inquirer.*—This Fuchsia may be flowered early in winter by striking cuttings of it in spring and growing them on, keeping the shoots stopped and the flowers picked off until within six or seven weeks of the time when it is wanted to be in flower.—S.

Fruiting the Monstera.—At Hillsfield we found no difficulty in fruiting this plant. It was placed in a large pot on a slate stage close to the glass in the centre of the Orchid house, and a noble-looking object it was, throwing its fine foliage over the pathway on each side, and forming quite a bow to walk under. The pot in which it grew was placed about 3 ft. from a large tank of water, which the roots reached, and in which they ramified abundantly; thus circumstantiated it fruiting freely.—J. C. M.

Rose Houses.—As I am about to erect a small Rose house would you kindly inform me what are the dimensions of the one at Gunnersbury, and the angle of its roof?—*Subscriber, Dublin.* [Length, 42 ft. width, 23 ft.; angle of elevation, 30°; width of borders round the house, 2 ft. 6 in.; depth, 2 ft. 6 in., centre bed, width, 11 ft. 6 in.; depth of border, 2 ft. 6 in.; width of pathways, 3 ft. 6 in.—R.]

Setting Peaches.—Having read several remarks lately on the setting of Peaches by artificial means, such as by the use of Pampas Grass, feathers, &c., it occurred to me while thinning some Peach trees the other day that I would take the liberty of sending a few shoots as fair samples of our trees here, which have had none of the above means applied in order to set the fruit. I never find the slightest difficulty in setting Peaches, Plums, or Cherries, without having recourse to such measures.—*D. M.* [Peaches could not possibly be set more thickly than those above alluded to. On a piece of shoot 44 in. in length we counted a dozen fruit.]

Shrub Pruning.—1. How, and at what time, should the white and yellow Jasmines be pruned? Do they flower on the wood made the previous year and also on two-year-old wood? 2. Should *Pyrus japonica* be pruned like an Apple or a Pear tree? 3. Does the white *Spiraea* ripen its crowns in this country sufficiently for forcing?—*Sub.* [Prune the Jasmines immediately after flowering. We always clip them with hedge shears. Nearly all their flowers are produced on shoots of the previous year's growth, but occasionally some few flowers appeared on spurs. The *Pyrus japonica* flowers most freely if pruned on the spur system, but a certain amount of new wood should be laid in annually to supply the place of any old shoots, the spurs of which have become long and unsightly. The white *Spiraea* never fails to ripen its crowns sufficiently for forcing, but it is well to have two sets of plants and to force them alternately, i.e., those forced this year, as soon as done flowering, should be planted out on a south border and allowed to flower next year in the open air, when they will be quite fit to force the following year.—*W. W.*]

Flowerless Stephanotis.—*Mr. Baines* says in reply to "H. H." (p. 248) that he has never met with one of the so-called flowerless varieties of *Stephanotis*, and that he considers bad management is the only cause of its not flowering. In this I cannot agree with him, as I am perfectly sure that there are plenty of plants that do not flower in collections, owing, I believe, to their being seedlings. I have met with numbers of plants, well grown, but which would rarely flower, and which, when replaced by plants obtained from cuttings taken from flowering plants, succeeded admirably. I was recently at a sale of plants where a very fine *Stephanotis* full of buds was sold for a high price. Over seventy seedling plants were then sold at more than the usual nursery price for ordinary plants, because they were seedlings from the plant in question, amateurs imagining that they had obtained rarities. This, I believe, explains the complaint so frequently made about flowerless plants of *Stephanotis*.—*J. H. LEX, Croydon.*

Root-eating Hollies.—Can you inform me what has eaten the roots of my young Hollies? Two years ago I planted a line of them 60 yards long, to form a hedge, and all went well until a few days ago, when I found several of the plants eaten off at the roots. Would moles do this? The thick part of the root has entirely disappeared, nothing remaining in the ground but the small fibres. I am not sufficiently acquainted with the habits of the mole to know whether it would eat the roots of trees or not.—*J. H., Newton House, Ealington, York.* [My belief is that the mischief is done by the field mouse, and this is confirmed by the opinions of others to whom I have shown the section of the root. During the past winter, this little animal has been unusually busy, and I attribute to him the destruction of many scores of Austrian Pine, which he has attacked in the manner shown by the specimen sent. Seeing these completely ringed in many places after the severe weather of January and February, I concluded that rabbits had obtained access to them by climbing upon the snow drifts. The injured plants were removed and others were in their place, and since that time nearly every foot of plant has been injured. Some of the older ones are ringed 5 ft. from the ground, in places inaccessible to rabbits. Several mice of an unusually dark colour have been seen amongst the trees, and before many days are past I hope to hear that one has been caught in the act. The mice commenced upon several Scotch Pines, but these were evidently not to their taste and they returned to the Austrians.—*A. J. BURROWS.*]

Limes for Avenue or Street Planting.—The following kinds of Lime trees are said to be good for town planting, for which it is known

the common kind is unsuitable, owing to its early defoliation. The sorts recommended are *Tilia alba*, *T. macrophylla*, and *T. dasystyla*, which retain their fine bold leaves until most other deciduous trees are bare of foliage. *Tilia alba* is an old and well known tree, but it is not so often seen and planted as its merits demand; its leaves are larger than those of the common kind, and beautifully white on the under surface. The other two are remarkable for their large, handsome foliage, fully double the size of that of the common Lime; they are somewhat alike when seen, at a little distance, but when closely examined they are sufficiently distinct to be kept separate. *T. dasystyla* is not well-known nor perhaps plentiful, but it has two good qualities belonging to it; its leaves are large and fine and they hang on the tree till late in the season.—"Florist."

Names of Plants.—*J. S. L. G.—1.* Croton spirale. 2, *Gymnogramma Massoni*. 3, *Lygodium japonicum*. 4 and 5, undeterminable. 6, *Davallia dissecta*. 7, *Didymochloa truncatula*. 8, *Nipholopis rupestris*. 9, *Selaginella caesia arbores*. 10, *Adiantum pentadactylon*. 11, *Adiantum Capillus-Veneris* variety. 12, *Nephrolepis undulata*. *J. H. C.*—The Cornelian Cherry (*Cornus Mas*).

Insects.—*W. W. Stickland.*—The grubs sent are apparently those of the weevil (*Otiorhynchus sulcatus*, the grub of which is a well-known gardener's enemy, and should be carefully looked after and destroyed.—*W. W. S.*

QUESTIONS.

Sweet-scented Camellia.—I have been told that there grows at Cintra, near Lisbon, a double white Camellia with scented flowers. Can any reader of THE GARDEN inform me whether this is so or not? and, if so, is it in commerce?—*A. H. R.*

Coleus Scotti.—If any of your correspondents have tried this for bedding purposes, I should be glad of their experience respecting it.—*A. H. R.*

Glass Structures.—As I am about erecting a range of glass consisting of a plant house and early and late Vineries, I should be glad to be informed as to the respective merits of span-roof houses as compared with half-span lean-to houses both for plants and Vines; also as to the cost and difficulty of heating them respectively.—*R. S.*

A Green Base for Dinner-table Plants.—The common practice of placing the plants on the dinner table in vessels of gold and silver may be varied occasionally with advantage. Bases may be arranged in the following manner.—Choose a number of circular pieces of board, $\frac{1}{2}$ in. thick, and from 9 in. to 12 in. in diameter; the larger circles will form a base for a plant in a 5-in. pot and the smaller for a 3-in. one. Edge the boards with narrow strips of perforated zinc, rising up above the face of the boards about $\frac{1}{2}$ in.; this is quite enough to hold the soil up till the Moss and other plants used completely cover it. In placing the Moss on the boards an empty pot of a suitable size should be held in the centre and the soil pressed round it, raising it up to the rim in an easy graceful curve. *Selaginella centaurica* will soon cover the soil and form a dense mass of elegant green, and, when required for use, the empty pot can be taken out and the plant dropped into the hole left. Although I have only mentioned the *Selaginella*, other plants, such as *Sedum glaucum* and *Monthera Palegium gibraltarica* will do for a green base, whilst for coloured bases small cuttings of *Alternanthera*, dibbled in quite thickly, and placed in a close, warm pit, will soon furnish them well. *Tradescantia vittata* for a large base has a pretty effect; it is more spreading and less formal in its growth than most plants, and grows very rapidly. There is a good deal of green mixed with the cream colour in its variegated foliage that makes it effective under artificial light. In clothing these bases I rather prefer taking large spreading pieces of whatever plant I require, except the *Alternanthera*, laying the sprays on the little mounds of soil, and pegging them close down with very small pegs, using sprays enough to cover the whole well; then I sprinkle some sand over the top, water with a fine-rosed pot, and place them in a warm, shady situation. They do very well set among larger plants in the stove, or in any situation where warmth, moisture, and shade are present.—*E. H.*

JOBITUARY.

We have to record, with much regret, the death of JAMES STEVENSON, who, for upwards of thirty years, was gardener at Cobham Park, Surrey. The gardens there, with their extensive ranges of glasshouses, their fine fruit walls furnished with galvanised wires on which to train the trees, were wholly planned and laid out under his direction, and most complete they are acknowledged to be in every department. But gardening, proficient as he was in it, did not alone occupy Mr. Stevenson's attention; he was also a good architect; the schools in the village of Cobham, built in commemoration of the late Mr. Harvey Combe, were erected under his superintendence and from his designs, and he acted as clerk of the works during the building of the new mansion at Cobham Park. Both in public and private life he was much respected; his friends, of whom few had so many, have lost a genial, kind-hearted man, and horticulture one of her ablest practitioners. He died on Sunday morning last, at the comparatively early age of sixty.

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SATURDAY, APRIL 12, 1879.

Vol. XV.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

NOTES OF THE WEEK.

Wild Gardening in Hyde Park.—A high bank at the end of the Serpentine has lately been prettily dotted with *Crocuses* of various colours and *Snowdrops*, which look very gay in the Grass, though they have not yet spread into the glowing tufts that one admires in country gardens. About London, owing to the plants being frequently disturbed, one rarely sees a handsome glow of *Crocuses*. As on such banks under trees as that at the Serpentine there is no need to mow the Grass until the *Crocus* leaves are ripened, these plants might there be allowed to grow undisturbed. In time they would probably prove a great attraction. We have noticed them sometimes more at home under trees where the Grass is poor or nearly absent than in open, rich, Grassy places.

Anemone stellata.—I have the white form of this *Anemone* now finely in flower. At first it is rather stained with purple, but when fully out it is a pure white star, with pale purple under petals. This with the black eye and the pretty foliage makes it a striking flower, and a very good addition to spring hardy plants. It was found wild near Rome about two years ago by my friend, Dr. Lowe, and is, I believe, very scarce.—H. N. ELLACOMBE, *Bilton.*

Hydrangea paniculata grandiflora.—This magnificent shrub has come through the past winter without the slightest injury, alive, in fact, to the tips, thus establishing its claim to rank among the hardiest occupants of our gardens. By-the-by, now is a good time to prune it. It should be cut in quite close, in order to ensure strong young growths and large heads of flowers.—T. SMITH, *Newry.*

The Four-coloured Lachenalia (L. quadricolor).—We saw this handsome plant flowering in fine condition the other day at Chiswick. Its lance-shaped leaves are mottled with chocolate, and also the flower stem, which rises from 9 in. to 10 in. high, and bears several drooping bell-shaped flowers with a striking combination of colours, being scarlet below, then yellow and green, and tipped with deep chocolate. As a greenhouse plant it ought to be better known than it is, having now been in this country for many years.—W.

Andromeda floribunda.—Among the numerous kinds of spring-flowering shrubs few are capable of producing a more showy effect than this dwarf *Andromeda*, on account of the abundance of the pure white Lily of the Valley-like blossoms which it produces. When planted in masses, or associated with the drooping *Forsythia* (*F. suspensa*) and others, it is remarkably effective, and tends to relieve the naked appearance of the latter.—W.

Cypripedium Schlimi.—This appears to be almost a perpetual flowering Orchid. I have a plant of it under my care in a 10-in. pot, which has been flowering for fourteen months, not more than four or five days intervening at any time between the fading of one flower and the opening of another. At the present time it is bearing two spikes, with a third flower on each, and another spike is just about to commence flowering, so that, under favourable circumstances, it will continue in blossom for six months longer. The plant in question is grown in an ordinary stove, where, during the late severe winter, the thermometer averaged 46° for over a fortnight.—E. D.

Saxifraga retusa.—On the new and excellently constructed rockery at Chiswick, this little *Saxifraga* quite enlivens its surroundings by its dense cushion of pink blossoms. In our opinion it is much prettier than the ordinary *S. oppositifolia*, to which it is nearly related, as its small blossoms are produced in umbel-like clusters, and its growth is more compact. The common *Hepatica*, in a great variety of colours, is also a very attractive feature here, being planted in large masses on the shady side, thus forming a means of giving the rock garden a cheerful appearance at this the dulllest season for Alpine flowers.—W.

Chusan Palms and the Frost.—Several plants of *Chamerops excelsa* that have stood fully exposed all the winter are as green and healthy as possible; even the young immature leaves are not the least injured. As we had frost enough to kill such plants as *Stocks*, *Wallflowers*, and many of the so-called hardy spring flowers, there need now be no hesitation in planting this handsome *Palm* out-of-doors in any well-sheltered position with a good prospect of success.—J. G.

Camellia reticulata.—In the Royal Horticultural Society's Gardens at Chiswick, this *Camellia* is just now highly attractive, being literally covered with huge rosy blossoms, which are semi-double. Like the ordinary *C. japonica*, it is quite hardy, but it flowers far more satisfactorily under glass than out-of-doors; hence it is afforded the protection of a deep two-light pit, which it completely fills.—W.

Hardiness of Liliun neilgherrense.—A pot of this was plunged through the winter along with others in a cold frame, covered quite over with about 4 in. of sand. This pot was quite close to the side of the frame, and frozen quite through and through; nevertheless the bulb is now perfectly sound, and is making new roots.—T. SMITH, *Newry.*

Dog-tooth Violets in Grass.—A few days ago I saw a number of irregular clumps of these, dotted here and there on a gently sloping bank of turf, and, in front of clumps of evergreens, they looked quite charming, and their dark spotted leaves showed up to much better effect on the fresh green Grass than they do in borders. They were all of the red variety, and required a few of the white form among them to make the picture perfect.—T. SMITH, *Newry.*

Hardy Primroses.—For the early decoration of the flower garden the different varieties of *Primrose* are well worth careful attention, as they not only afford a great variety of colour, but a long and continuous season of bloom. Many of our coloured single varieties that began to flower freely last autumn, after being ice-bound for weeks together, burst out in full beauty some time ago, and are now covered with blossom. The double varieties (white, sulphur, mauve) are now opening their flowers in such profusion as to quite conceal the foliage, the double white being exceptionally chaste and beautiful. They succeed admirably in sheltered beds among *Conifers*, &c., cutting winds being more destructive to them than frost.—J. GROOM.

Aucuba Berries.—We have some beds of *Aucuba* quite loaded with berries that are getting beautifully coloured. *Aucuba* flowers may be readily fertilised by planting a male *Aucuba* in the bed, or anywhere within the radius of a few yards. This is both simpler and more effectual than artificial fertilisation, which, on a large scale, is almost impossible.—J. G. L.

Hepaticas in Masses.—These charming spring flowers are now in full beauty with us. They should not be divided too frequently, as one good large clump is more effective than a dozen small ones. In cottage gardens in this neighbourhood they are largely grown, and few plants are prettier at this season of the year.—J. G., *Maitstone.*

New Park at Birmingham.—On Saturday last, the Mayor of Birmingham opened the new park at Small Heath, which has been presented to that town by Miss Ryland, and towards the laying out of which she has contributed £4000. The park is about 41 acres in extent, and is the eighth park which has been opened in Birmingham.

Plants in Flower in a Somersetshire Garden.—There are now in flower in my garden in Somerset (April 2) the following plants, viz., *Soldanella Wheeleri*, *Scilla præcox*, *Iris persica*, *Alpine Auriculas*, *Orobanch niger*, *Viola lutea*, *Lungwort*, *Cyclamen coum* (red), *Saxifraga oppositifolia*, *Primula Golden Plover*, a variety of *Polyanthuses*, and *Puschkinia scilloides*. The following plants also are well in bud, viz., *Dicentra spectabilis*, *D. eximia*, *Camellia imbricata*, *Crown Imperials*, *Primula cortusoides*, *P. denticulata*, *Iberis gibraltarica*, a white *Veronica* with mauve stamens (the name of which I do not know). *Agapanthus*, which have been out all the winter, although cut down by frost which registered as low as 12° Fahr., are now shooting freely. Also, I hope to have saved a *Lapageria rosea* which was planted against a low south wall; this, I am glad to say, appears to be shooting, although the frost cut it down to the ground.—A. B. T.

Royal Horticultural Society.—It is understood, says the "Builder," that the "1851 Commissioners" have determined to take possession of the gardens at South Kensington; in fact, that they have formally demanded it and have been refused. The Law Courts will probably be appealed to to settle the precise legal position of the two bodies.

Edinburgh Professorship of Botany.—We learn that this has this week been filled by the selection of Dr. Dickson, Professor of Botany in the University of Glasgow, and previously in the University of Dublin, where he succeeded Dr. Harvey.

Mr. Hovey's Camellias.—Specimen plants of these beautiful new American *Camellias*, several of which received first-class certificates the other day at South Kensington, are now in flower in Mr. Bull's nursery at Chelsea. They are to be sold, we understand, at Stevens' Rooms on the 17th inst.

NOTES FROM KEW.

Hardy Plants.—The plant of Blagay's Daphne (*D. Blagayana*), from which our coloured illustration (Plate 143) was taken last year, is again in flower, though scarcely, if at all, larger than at that time, thus showing its slow rate of growth. A more desirable dwarf shrub for the choicest parts of the rock garden is not in cultivation. The dense terminal clusters of pure white blossoms, immediately surrounded by deep green leaves, added to the delicious perfume emitted by them, similar to that of its congener, *D. indica*, at once arrest attention. This charming novelty is a native of rocky places in various parts of Carniola, and, though, as yet, very rare in collections, it is one of the plants requiring to be sought after. The *Puschkinias* are charming little bulbous plants, and have a brilliant effect when associated with other spring-flowering plants. The rare *P. scilloides* (see our illustration last year) is a dwarf slender kind of spreading habit, producing abundance of flowers, about $\frac{1}{2}$ in. across, of a delicate mauve tint. What is known as *P. libanotica* (syn. *P. sicula* of Van Houtte) is a very handsome kind growing about 6 in. high, of erect habit, with a pair of rather broad-channelled leaves, from which arises a loose raceme of blossoms, each about the size of a sixpenny piece, white with a blue stripe down the centre of each division. The variety *compacta* is a much superior kind with larger flowers arranged more densely and the blue markings brighter. All are natives of the Caucasus. Amongst the *Daffodils* the *Bulbocodium* or *Hoop-Petticod* section is becoming interesting. The narrow-leaved form (*Narcissus Bulbocodium* var. *tenuifolius*) differs from the type on account of its narrow twisted foliage, and rather smaller flowers. A little Alpine form called *nivalis* is even smaller than the last in all its parts. It is found at high elevations on the mountains of Spain. Another charming Spanish kind is *N. rupicola* (syn. *N. juncifolius* var. *apodanthus*), but it differs from the Rush-leaved *Daffodil* in having smaller sized bright golden flowers, crimped crown, and in being very glaucous.

Greenhouse Plants.—The *Convallaria-like* *Spearanthes* (*S. convallarioides*) is a pretty Liliaceous plant, which grows about 9 in. high; it has lance-shaped leaves, from which arises the flower stem, bearing pure white blossoms $\frac{1}{2}$ in. across, of firm texture and arranged in a racemose manner. It is a native of China, near Shanghai. Though it flowers more freely when under glass it is perfectly hardy. Some of the *Lachenalias* are very showy, notably the old *L. tricolor*, and also its variety *luteola*, with its flowers almost all yellow. *L. tigrina* is another very desirable kind; it has a brown and green mottled stem and drooping bell-like blossoms, scarlet and pale green tipped with deep chocolate. These, like the rest of the *Lachenalias*, are natives of the Cape, and therefore they require the protection of a cool house or frame. In some of the species of *Pelargonium*, we see colours that have not yet been infused into the hybrid varieties, and none is more striking in this respect than *P. ardens* var. *superbum*, which is truly a striking kind; it has large, hairy, somewhat heart-shaped leaves, and bears dense clusters of rich deep crimson blossoms, with the tips of the petals of a deeper shade. In No. 4 house free use is made of the broad-leaved *Kalmia* (*K. latifolia*), and a very pretty effect it has when mixed with other plants. The *Nepenthes-like* *Arisema* (*A. nepenthoides*) is a handsome novelty from Sikkim belonging to the *Arum* family. It is about 2 ft. high, has an erect stem, heartfully mottled with black, purple, and light green, and bears a pair of leaves divided into narrow wavy divisions. The blossom is not showy, being greenish, but the form is angular, the upper part resembling a pitcher of *Nepenthes*.

Stove Plants.—Some highly ornamental climbing plants now adorn the roofs of the Palm-house and stove, and amongst them the twining *Petrea* (*P. volubilis*) is very attractive. It has long, slender branches and oval, deep green leaves, from the axils of which are produced long, drooping racemes of star-like blossoms, consisting of a pale mauve calyx with narrow spreading divisions, considerably larger than the corolla, which is of the size and form of the common Violet, and of a deep bluish-purple tint. It soon drops after expanding, leaving the calyx, which remains in beauty for some time. It is a native of Vera Cruz, and a very old introduction to our stoves, though now but too seldom seen. It was the subject of a coloured illustration in *THE GARDEN* (Vol. XII., p. 40). Few occupants of the stove are more beautiful or useful for general cultivation than *Clerodendron Thomsoni*, an old introduction from Tropical Africa. The pure white lower parts of the blossoms form a striking contrast to the rich, deep crimson of the corolla, seldom seen even amongst tropical flowers, and the profusion with which they are borne, and the length of time during which they continue in perfection, much enhance their beauty. Near to this is *C. speciosum*, a garden hybrid, not nearly so attractive. The showy *Bignonia* (*B. speciosa*), with large, mauve-coloured flowers, pencilled with deep purple, is a highly desirable kind, perfectly amenable to greenhouse culture. It is a native of Uruguay, from whence it was introduced about forty years

ago. *B. purpurea*, which is flowering freely near the preceding, apparently differs but slightly, if at all, from it. *Thunbergia laurifolia* is another showy climber, with large, pale mauve blossoms, produced in long, pendulous racemes. The many-flowered *Pavonia* (*P. multiflora*) is a very ornamental shrub, belonging to the Mallow family. It grows about 18 in. high, and has rigid, slightly-toothed leaves, from 6 in. to 8 in. long. The flowers are produced singly from the axils of the upper leaves; they consist of an outer row of narrow bracts, about 1 in. long, arranged in a cup-like manner, enclosing the deep chocolate-coloured flower, from which a fringed tuft of stamens protrudes. It inhabits the primeval forests of Tropical America, and appears to be the same as the kind known as *P. Wiotti*. *Phædranassa chloracra* is an interesting *Amaryllid*, with a stout flower-stem, nearly 3 ft. high, terminated by an umbel composed of about six blossoms, which are 2 in. long and tubular; the base and the tips are of a glaucous green tint, and the rest of a deep flesh colour. The leaves, like the stem and flowers, are also very glaucous. It is a native of Tropical America. More curious flowers in point of structure than those of *Mantisia saltatoria*, a plant belonging to the Ginger family, seldom come under observation; indeed, it is difficult to describe their strange form. They bear some resemblance to the insect known as *Mantis*, hence the generic name. They are also called *Opera Girls*, from the fanciful notion that they resemble dancing figures. The colour of the blossoms, as well as those of the stem and bracts, is pale purple, and there is a bright orange-coloured portion corresponding to the lip of an Orchid flower. Another member of the same family that comes from the same country, viz., the East Indies, is *Monolophus elegans* (syn. *P. Kamperferia*), a plant which bears beautiful large flowers, with a rich purple lip, elegantly pencilled with darker lines, and the other parts pure white. They are, moreover, deliciously fragrant, and appear some time before the leaves.

Orchids.—The large-leaved *Dendrobium* (*D. macrophyllum*) is one of the best late flowering kinds; the numerous large violet-purple blossoms borne on long drooping stems are very attractive. The variety *superbum*, on account of its bright coloured and larger flowers, is an improvement on the original, and deserves a place in every collection. Considerably in the way of the last, but with much smaller blossoms, is a novelty from Moulmein, bearing the almost unpronounceable name of *D. rhodopterygium*. Another Moulmein kind is *D. dixanthum*, with orange-coloured flowers, rather small, and with a nearly round unfringed lip. *D. crystallinum*, with respect to the size and colour of the flowers, much resembles the old *D. Devonianum*, but lacks the beautiful fringed lip of the latter kind. *D. barbatulum*, which is a native of the vicinity of Bombay, is a charming kind. Its blossoms, which are of ivory whiteness, the lip being hairy at the base and tinged with yellow, are arranged in dense one-sided racemes on long slender stalks. It is a very useful kind for cutting purposes, as it lasts so long a time in perfection. One or two novelties among the *Lady's-slippers* attract attention; such as *Cypripedium Boxalli*, which seems to be a compromise between the well-known kinds *C. villosum* and *insigne*. It has the foliage of the former, but the markings and colour of the blossoms more nearly resemble those of the latter. *C. Argus*, a native of the Philippines, has mottled foliage, and flowers having a purplish lip, spotted side petals, and the upper part striped with green. The whole plant strongly resembles the rare Javanese kind *C. superbiens* (syn. *C. Veitchii*). *Odontoglossum ciriosum*, one of the best of its section, is still in flower. It is a variable kind in the matter of colouring and size of flowers, for in a small batch one may detect some well-marked forms. No collection of Orchids can be considered complete without this charming kind.—W.

New Fastigate Silver Poplar.—This, according to Professor Sargent, in the "Gardener's Monthly," has been called *P. alba Boileana*, in compliment to Dr. Charles Boile, of Berlin. Several very finely grown specimens of this pyramidal Silver Poplar may be seen, it is said, in the public garden of Teflis, and as the garden was laid out and planted by a fugitive Persian prince, whose name it still bears, it is probable that this tree was originally brought from Persia. The Fastigate Poplar is perfectly hardy, grows rapidly in any slightly moist soil, and is particularly remarkable for its habit and great size, completely dwarfing the Italian Poplar with which it is associated. The bark, even in old specimens, is smoothed out as if it were polished; it is of a clear bluish-green colour, without spots or cracks. The ramification is strong and characteristic. The brilliant white of the lower side of the leaves, which remains unchanged in its purity throughout the summer, makes a strong contrast with the dark green of the upper side, producing a striking effect, and rendering this tree visible at a long distance off. The wood of the Fastigate Poplar is of finer quality and more highly esteemed than that of the other Poplars. It is an ornamental tree of the first order, and can be highly recommended.

THE FLOWER GARDEN.

DRAPERY FOR THE TRUNKS AND BRANCHES OF TREES.

SOME time ago I saw a Weeping Willow, on the margin of a lake, that had its trunk clothed with Virginian Creeper, and the effect in autumn, when the sun shone through the drooping branches of the Willow—whose leaves were just becoming tinged with gold—upon the crimson of the creeper-covered trunk was rich in the extreme. The Everlasting Pea, both the rose-coloured and the white varieties, are very suitable for planting near small-growing trees, such as Laburnums, Thorns, or standard fruit trees, when such are grown in or within view of the grounds. In small places, where the orchard trees are planted on or near the lawn, some interest may be added to the plantation by covering the stems with some strong-growing creeper that is not easily destroyed, and I have seen

these Peas used for the purpose with good effect. Of course, they cannot be planted in orchards to which stock have access, as in such cases nothing would be permitted to live. Even the trees, until the stems become old and gnarled, must have protection. The Hop is a very effective plant for draping a thin specimen Arbor-vitæ, or Yew tree, but the shoots should be thinned out in spring, and not more than three or four allowed to climb up to the tree. When the leader emerges from the top of the bush, and throws its long, graceful wreaths of Hops over the dark green foliage, the contrast is most effective. In like manner the taller, stronger varieties of *Tropæolum* could be used on shrubs towards autumn without doing any harm, as the first frost would kill them, and they could be removed. After the first year there would be no occasion to plant any seeds of these *Tropæolums* round the shrubs, as enough would fall and winter in the ground to furnish sufficient and to spare. Clematises are well suited to plant at the base of deciduous trees and

even Yews, especially those with light-coloured flowers, which are set off to advantage by the dark background. The accompanying woodcut represents a *Clematis montana* on the branch of a Yew tree which I saw last May at Great Tew, and very effective it was. Jasmines and Honeysuckles are general favourites for such purposes. But all these plants do better if planted before the trees become too old or the soil exhausted. In the case of any old tree it may be desired to clothe some of the exhausted soil should be removed, and some fresh rich material substituted. But the new soil must not be placed much higher up the bole than it was covered by the old soil, or some mischief may arise to the bark of the tree and its health be injured. The *Wistaria*, if planted before its support has become old, will combine with excellent effect with any single specimen of not too dense a habit. Of course, the Beech should be avoided.

E. H.

HARDY BOG PLANTS AND THEIR CULTURE.

WATER-LOVING plants may, in cultivation, be conveniently divided into two classes, viz., those needing to be totally submerged and those requiring only the soil in which they are planted to be more or less constantly saturated for their successful treatment. The former class has already received full attention in *THE GARDEN* (Vol. XIV., p. 149), and it is the object of the following remarks to describe the most select and beautiful members of hardy bog plants which should be more generally found in cultivation than they are. One of the chief drawbacks to their introduction into gardens probably is that they require a situation that exists naturally in only few gardens; but to construct artificially on a small, or even on a large, scale, a place well adapted for the purpose is a simple matter. Where deep water aquatic plants are grown, bog plants should, of necessity, be an indispensable adjunct, as they flower under ordinary care when placed in pots or pans

upon elevated ridges or shelves, or planted on an ordinary raft made of rough planks, or on the more elaborate principle of the Wilson raft, the appearance of which, or some other simple and inexpensive contrivance, would be welcomed by most lovers of hardy plants. Again, those who are the fortunate possessors of a charming rivulet in proximity to the garden could form, without entailing much trouble, a capital bog garden by simply diverting the whole or part of its course so as to flow amongst rubble, &c., upon which bog soil could be placed, and if the position be in a slanting direction so much the better. In gardens where the above sources are not available, the best substitute is to take out the soil to a depth of 18 in., and then place a layer of clay about 6 in. thick at the bottom and sides, and on it put the soil, which for general purposes—and in which the majority of bog plants will thrive—should consist of three parts fibry peat, one part coarse sand, and one part leaf-mould. The surface should be undulated, so that those requiring less moisture may be

placed on the mounds. It will be found that even during summer comparatively a small amount of water occasionally is required to render it constantly swampy. For growing a few bog plants, or for isolated specimens, ordinary large-sized earthenware pans will be found to answer the purpose capitally. In planting the bog garden care should be taken that the strong-growing kinds will not, when fully developed, overrun those of weaker growth; hence it is advisable, as in the case of rock gardens, to set apart select spots for the more choice and rare kinds.

One great source of annoyance in connection with bog gardens is, that they are very liable to the depredations of the feathered tribe, which, in search of worms, play much havoc both with plants and soil, especially in spring; and if the usual mode of scaring be not effective, the choicest and smallest plants should be protected by pieces of



Clematis montana on a branch of Yew.

galvanised wire netting. Though this charming class of plants has been introduced from almost every temperate region, yet it is the bogs and swamps of North America that have afforded the most plentiful supply, and amongst them are some of the most beautiful. Amongst the choicest of these may be mentioned:—

The Virginian Meadow Beauty (*Rhexia virginica*), a plant which inhabits the sandy swamps of Virginia, &c. It is remarkable as being the only hardy member of the family to which it belongs. It is of a neat habit, with numerous erect, quadrangular stems growing about 1 ft. in height, and bearing for a considerable time during summer terminal clusters of rather large, rosy-purple blossoms with a central tuft of bright yellow stamens. Though reputedly difficult to manage in cultivation generally, it succeeds admirably in some gardens, delighting in a deep, moist, peaty soil, when afforded partial shade. It may be propagated freely by means of seeds, though a somewhat slow process, or by careful division in autumn, and in the operation every portion of the roots should be planted, as every small piece develops buds.

Another equally beautiful plant is

The Worm Grass (*Spigelia marilandica*), though it is questionable whether it succeeds best in a bog bed, or otherwise. The finest specimen of it which I ever saw was growing in a fully-exposed and sunny position in rich, stiff, loamy soil. It appeared to be in the most robust health. As it is generally assigned to bog culture, it is justifiable to include it in our list, but, wherever its position may be in the garden, it may be recommended as one of the most desirable hardy plants which we have, and one which should be included even in the choicest collection.

The Naked Coreopsis (*C. nudata*) is one of the most remarkable of the vast family of Composites. It so strikingly resembles the common Rush when not in flower, that it would be difficult to distinguish them, as the leaves are developed in the same cylindrical manner. The flowers are very beautiful, being about 1½ in. across, of a bright rosy-purple, changing to a lighter hue, and having a yellow centre. They are borne on slender, forked stalks, about 1½ ft. high, which bend gracefully, thus much enhancing its beauty. The only flowering specimen of this rarity which I have as yet seen is in the Kew collection, where it is apparently thriving well in a loamy soil in a moderately moist position. It is a native of Florida, inhabiting moist but exposed places.

Fringed Polygala (*P. paucifolia*).—One of the handsomest of all the Milkworths is this delicate little North American species. It grows only 3 in. or 4 in. high, has a creeping and branching rhizome, and bears slender, erect branches, each with four or five ovate leaves, and terminated by a small cluster of flowers, which resemble those of *P. Chamæbuxus* in form, but they are ¾ in. in length, and are of a bright rosy-purple colour. It inhabits sphagnum swamps in various localities, generally in mountainous districts. In cultivation it appears somewhat difficult to manage, but it apparently thrives best in peaty soil, to which has been added a little leaf-mould and white sand. It should be placed amongst the most select occupants of the bog garden. At present it is very rare in English gardens.

Yellow Milkwort (*P. lutea*).—This is scarcely less pretty or interesting. It produces its small, bright orange-coloured blossoms in globose heads, about ¾ in. in diameter, on stems from 3 in. to 6 in. high. It is much easier to manage than the preceding, delighting in moist, sandy places, conditions under which it is found in New Jersey and other parts of North America.

Helonias bullata.—This is another useful subject for the bog garden. It is of an erect habit, growing from 1 ft. to 2 ft. high, with a rosette of light green, oblong, lance-shaped leaves. The flowers, which are small but densely arranged in a racemose manner on erect stems, are rosy-purple, and are produced in the beginning of summer. This very handsome plant inhabits various parts of North America, abounding especially in New Jersey and Virginia, where it is found in swampy places. In cultivation it thrives well in peaty soil, and, like the preceding, requires an equable, moist, and not too wet position.

Grass of Parnassus (*Parnassia palustris*).—In addition to our native examples of this, the bogs of North America afford two others equally interesting and beautiful, viz., *P. caroliniana* and *P. asarifolia*. The former has larger flowers than our indigenous species, and the peculiar crown-like appendages inside the flower are fewer in number. *P. asarifolia* is also larger, but has kidney-shaped root leaves, otherwise they both much resemble *P. palustris*, and thrive under the same treatment in a compost of fibry peat, loam, and sand, and in a not too wet position in the bog garden.

Sclerolepis verticillata is an interesting and beautiful bog plant, nearly allied to *Eupatorium*. It has a dwarf, creeping habit and narrow leaves, arranged in whorls of five or six. The flower-heads terminate the branches and are of a beautiful mauve colour, and they last a long while in perfection. It should be allowed to creep about in the wettest parts of the bog; it is quite indifferent as to quality of soil, and is easily propagated by division or by means of seeds.

Galax aphylla, a member of the Heath family, is a most desirable plant for our purpose. It is an evergreen perennial, with roundish leaves, and during the greater part of the summer is adorned with an abundant supply of long and erect racemes of numerous small pure white blossoms. When established, it has a tendency to grow in huge, compact tufts, and when in flower forms a very attractive object. It thrives well in a deep, peaty soil, but should be placed in a not too wet position.

The Twin Flower (*Linnaea borealis*), belonging to the Honey-suckle family, is a charming little plant, dedicated to the naturalist Linnaeus. It is a slender, creeping, and trailing evergreen, with roundish, slightly-toothed leaves, in the axils of which are produced thread-like flower-stalks, which are forked, each bearing a small, bell-shaped, gracefully-drooping flower of a pale pink colour and very fragrant. It thrives admirably when grown under the same conditions as the preceding, but should be afforded partial shade. Besides being indigenous to North America, it also inhabits various parts of Europe, and comprises one of our native wild flowers, though somewhat rare.

Orchids.—Some of the North American representatives of these are especially noteworthy, such as the Moccasin-flower or showy Lady's-slipper (*Cypripedium spectabile*), which is generally acknowledged to be the finest of the genus, and well it merits that distinction. It is too well known to need description, more especially as an excellent coloured illustration of it will be found in Vol. XI. of THE GARDEN. The stemless Lady's-slipper (*C. aculea*), which inhabits shady, moist woods, is another fine kind, well deserving of culture, also the Ram's-head Lady's-slipper (*C. arietinum*), with its small, singularly-shaped blossoms. The small white Lady's-slipper (*C. candidum*) is a rare and very pretty kind, with rather small white and brownish flowers. The larger yellow Lady's-slipper (*C. pubescens*) should rank next to *C. spectabile* as regards size and elegance of blossoms, which have wavy, twisted, purplish-brown outer divisions and a bright yellow lip. All the above-mentioned kinds thrive admirably when associated with bog plants, and all delight in a deep, peaty soil and partial shade; they may be propagated readily by division in autumn or spring. *Calopogon pulchellus* is another beautiful little bulbous-rooted plant, well deserving of culture. It produces erect stems about 1 ft. high, clothed with narrow leaves, and in summer it bears at its apex from two to six blossoms, 1 in. across, of a pink-purple colour, with the lip beautifully bearded with white, yellow, and purple club-shaped hairs; it is, moreover, very fragrant. The *Ophioglossum-like* *Pogonia* (*P. ophioglossoides*) is a handsome kind, from 8 in. to 9 in. high, bearing but one large stem-clasping leaf, and a solitary flower, or rarely more, which is 1 in. in diameter, of a pale purple colour, with a crested and elegantly-fringed lip. The bulbous *Arethusa* (*A. bulbosa*), which inhabits the bogs in Virginia, &c., and which is now of frequent occurrence in cultivation, is an interesting as well as elegant little plant, which is very easy to manage. As its name implies, it produces small, globular bulbs, from which spring the small flower-stems, each bearing, in early summer, a single large blossom, of a lovely rose-purple colour, and sweet scented. There are various other North American terrestrial Orchids in cultivation of less striking beauty than those above mentioned, comprising the curious and rare Northern *Calypso* (*C. borealis*), which bears a large and showy purple and yellow flower; also the white-fringed *Orchis* (*Platanthera blephariglotis*), 1 ft. high, with beautifully pure white blossoms, with a delicately-fringed lip. The large purple (*P. fimbriata*) and the small purple *Orchis* (*P. psychodes*) are not uncommon in cultivation, and are especially noteworthy.

All the preceding kinds of Orchids thrive well in deep, peaty soil, and in partial shade, with the exception of the *Calypso borealis*, which delights to creep in wet, living Moss only. The hardy representative of the gorgeously painted foliage of the tropical *Anætochilus* is undoubtedly the downy *Goodyera* (*G. pubescens*), which, although of not such bright colours, the silvery markings on the rich green foliage render it strikingly beautiful. It seems to thrive best in a somewhat shady position, but shade is not indispensable.

Insectivorous Plants.—It is a rather singular coincidence that the majority of the so-called insectivorous plants are natives of

the North American bogs and swamps, and of these there are several of sufficient hardiness to be grown in the open air in this country. Of these, probably the best known and hardiest is the purple Side-saddle flower (*Sarracenia purpurea*). Besides the beautiful markings of the pitcher-like leaves, it bears equally singular blood-red flowers, which, in the case of established plants, are freely produced annually. A still more remarkable plant, in point of structure, is the Californian Pitcher plant (*Darlingtonia californica*) which may now be included in the list, inasmuch as it has proved hardy enough to withstand the full vigour of our climate. Young plants may be obtained from seeds which germinate readily. The best and quickest mode of propagation is, however, by offshoots, which old-established plants throw out plentifully, and which soon make strong specimens. Another, the strikingly-curious *Venus' Fly-Trap* (*Dionaea muscipula*) is perfectly amenable to outside culture, with perhaps the protection of a bell-glass during the winter. Like the two preceding, it acquires under such treatment a robustness that is unknown to plants under indoor culture. Of about the same degree of laxness is the Trumpet plant (*Sarracenia flava*), which inhabits the bogs of Virginia, &c. It differs from its congener (*S. purpurea*) in having its pitchers quite erect and much longer, and the flowers are yellowish. One mode of treatment is applicable to all the four preceding; they should be grown in a compost consisting of one part fibry peat broken roughly, one part live Sphagnum Moss chopped rather fine, and a little sand and broken charcoal. A layer of Moss should be placed on the surface, so that it will grow round the plants, thus tending to keep them in a healthy condition. Their position in the bog garden should be in the wettest part, but the ground should be raised where the plants are placed so that the surface may be somewhat dryer than about the roots.

Sundews.—Two beautiful Sundews inhabit the North American bogs besides those found in this country, viz., the slender Sundew (*Drosera linearis*), with long and very narrow leaves profusely bedewed with the viscid substance peculiar to all the Sundews. It is found on the shores of Lake Superior. The thread-leaved Sundew (*D. filiformis*) is another very handsome kind with still longer and narrower leaves, and with beautiful rose-coloured blossoms, which are produced at the end of summer. It is found in various parts of the United States growing in wet sand, a circumstance which should be noted, as a frequent cause of failure in cultivating this plant is treating it in the same manner as the other kinds; it should be grown in a compost of coarse river sand, with an admixture of a little fibrous loam, and should always be kept in a very moist condition.

Hooker's Chrysobactron (*C. Hookeri*) is a highly ornamental New Zealand plant, where it inhabits the margins of water-courses, boggy places, &c., growing in great abundance, forming clumps sometimes more than 3 ft. across, and, when in full blossom, it is said to afford a splendid sight, as vast areas are covered with its beautiful bright yellow flowers. Its foliage forms compact tufts, the leaves being about 1½ ft. long, narrow channelled, and of a glaucous green colour, shaded with brown at the base. The flower-spikes are leafless, and rise nearly 2 ft. in height, and the flowers are borne in a loose racemose manner, expanding in May or June. It thrives best in peaty soil mixed with a good sprinkling of river sand, and the soil should be constantly moist, but not too wet. It may be propagated freely from seeds, or by division, an operation which should be done in spring.

Samolus litoralis is another very elegant New Zealand bog plant, belonging to the Primrose family, but remarkably unlike one; it more resembles the Cranberry than any other plant with which we are familiar. It has numerous slender branches, 1 ft. to 1½ ft. long, with small, leathery, oblong foliage. For a considerable time during summer the branches are covered with rosy blossoms, ½ in. across, which are borne in the axils of nearly every leaf, thus rendering it very attractive. To be successful with it under culture, it should be grown in a rich, loamy soil, and be kept constantly moist and fully exposed. Propagation may be easily effected by means of the numerous suckers, or offshoots, or by seeds.

Capé Crinum (*C. capense*).—One of the showiest and most stately denizens of the bog garden is this charming bulbous plant and its varieties. As to its hardiness in the south there can be no doubt, as I have grown it for some years wholly unprotected during winter. It is the largest-growing, hardy bulbous plant we have, having bulbs, when fully matured, 6 in. in diameter, each developing numerous glaucous green leaves from 1 ft. to 2 ft. long, and 4 in. broad at the base, tapering to a point. The flower-stems are stout, rising considerably above the foliage, being from 2 ft. to 5 ft. high, each bearing from six to sixteen large flowers in an umbellate manner, varying in colour from almost white to a deep rose. The variety called *C. riparium* is the darkest, and there seems to be every intermediate shade between that and *C. fortuitum*, which is the lightest. *C. striatum* has the dark colour arranged in longitudinal stripes. The position of the

Capé Crinum in the bog garden should be where the roots will be in abundant moisture, but the bulbs raised and comparatively dry. It delights in a deep, rich, loamy soil, the stiffer, the better; in fact, it is advisable to put clay at the bottom, in order that the roots may revel in it. Young plants may easily be obtained from seed, which should be sown as soon as it is ripe; it may also be increased by division of the bulbs. If there be but one bulb, and it shows no sign of making offshoots, it should be cut over at the top, when it will immediately send out numerous shoots, by which it may be propagated.

Native Bog Plants.—Our native flora affords a few very desirable objects for the bog garden; indeed, some are not surpassed in beauty by the choicer exotics. Amongst these may be noted the Marsh Gentian (*Gentiana Pneumonanthe*), which inhabits low, Heathy, moist places, growing from 6 in. to 12 in. high, with erect stems and narrow, pointed leaves. The flowers are borne in terminal clusters, and are from 1 in. to 2 in. long, bell shaped, of a lovely deep blue within, and with five broad, greenish lines corresponding with the divisions outside. The white variety, though rare, forms a charming contrast when associated with the type. It thrives best in a deep, peaty soil, where it is constantly moist. It may be increased by seeds or careful division in spring. The bog Asphodel (*Narthecium ossifragum*), with its Iris-like leaves, forms dense tufts from 6 in. to 8 in. high, and produces numerous elongated, straight racemes of rather large yellow flowers, succeeded by red capsules, which remain on the plant during winter. It delights in a spongy, wet place, with live Moss on the surface, in which the fibry, creeping roots like to creep. An elegant little plant, too, is the bog Pimpernel, which is found in various parts in wet, Mossy bogs. It has thread-like, creeping stems and roundish leaves, from the axils of which are borne its pretty pink blossoms on long, slender stalks. It will take care of itself if placed under the conditions mentioned above, and will soon cover large spaces. Grass of Parnassus (*Parnassia palustris*) is another very interesting bog plant, differing from its North American congener in its more numerous gland-like appendages inside the corolla, which give it a more fringed appearance. Like the other two kinds previously mentioned, it succeeds well in ordinary bog soil in a moderately wet position. The common Marsh Marigold makes a very showy plant, enlivening the bog garden in early spring with a profusion of its bright golden blossoms, and, on this account, it is well worth growing. *Caltha radicans* is a kind much resembling it, but it has a creeping habit, smaller flowers, and triangular, not heart-shaped, leaves. The British Sundews well merit attention, as they are scarcely less beautiful than the rarer exotic kinds, especially the common round-leaved kind (*Drosera rotundifolia*), with its rosette of dew-bespangled leaves and small spikes of white flowers. The Great Sundew (*D. anglica*) and the spatulate-leaved kind (*D. intermedia*) are less common; the former has longer and much narrower leaves than the latter, but both are copiously covered with viscid matter. They all thrive in company with the North American kinds before alluded to, and should be grown where they would be fully exposed and not likely to be overrun by plants of ranker growth. The Scottish Asphodel (*Totheldia palustris*), a plant with the habit of an Iris in miniature, and spikes of pale yellow flowers, may also find a place amongst others. The Summer Snowflake (*Leucojum æstivum*) also deserves a passing notice, as it thrives better when grown with bog plants than in an ordinary border, and very beautiful it is for the purpose with its drooping clusters of Snowdrop-like flowers. A moderately moist place and loamy soil will be found to suit it capitally.

Some of the indigenous Orchids prefer bog treatment, and these include some of the best. The handsome lag-flowered Orchis (*O. laxiflora*) which inhabits the bogs and wet meadows in the Channel Islands, attains high perfection in the bog garden in rich, loamy soil; also the Marsh Orchis (*O. latifolia*), a larger and even finer kind, with long spikes of numerous blossoms, varying in colour from a pale rose to deep purple, and beautifully dotted with purple. The Marsh Helleborine (*Epipactis palustris*) is another handsome kind requiring little treatment, and one which would thrive better with an admixture of broken chalk to the compost. The Butterworts again are very pretty as well as curious little plants, always found growing wild in spongy bogs, amongst Moss, &c., and under these conditions they should be cultivated. The best is the Irish Butterwort (*Pinguicula grandiflora*) which inhabits boggy places in the south-west parts of Ireland. It has large Violet-like blossoms of a purplish-blue colour, white in the centre, and is the finest-flowering kind in cultivation. The common and Alpine sorts (*P. vulgaris* and *alpina*) are much smaller and less desirable. The Vallisneria-leaved Butterwort (*P. vallisneriaefolia*) which was the subject of a coloured illustration in the last volume of THE GARDEN, is sure to be a popular favourite when it shall have become better known than it now is.

The foregoing remarks allude chiefly to the choicer kinds of bog plants, but there are many others that might with advantage be associated with them, and especially those with hand-

some foliage which would considerably enhance the interest and beauty of the bog garden and break up the monotonous effect of dwarf vegetation. For instance, what fine specimens of the noble *Gunnera scabra* can be obtained in a short time under such treatment! also the fine-leaved Japanese Groundsel (*Senecio japonica*) and a host of others; but care should be taken when planting them that they are arranged so that the weaker and dwarfer kinds will not be overrun by them, though in many instances they afford the partial shade that is indispensable to the well being of some plants.

Subjoined is a list of desirable kinds adapted for bog culture, and the majority of them are readily procurable at most nurseries. Those marked thus * are British species.

Dwarf kinds which succeed best in peaty soil:—

<i>Coptis trifoliata</i>	* <i>Drosera anglica</i>
<i>Helonias bullata</i>	<i>Cornus canadensis</i>
* <i>Gentiana Pneumonanthe</i>	<i>Rhexia virginica</i>
<i>Galax aphylla</i>	<i>Chrysobacchar Hookeri</i>
<i>Spigelia marilandica</i>	<i>Desfontainia californica</i>
* <i>Anagallis tenella</i>	<i>Oenoclea sensibilis</i>
<i>Linnaea borealis</i>	<i>Lastrea novaboracensis</i>
<i>Saxaenola purpurea</i>	thylypteris
* <i>Saxifraga Hirculus</i>	<i>Cypripedium spectabile</i>
<i>aquatica</i>	aristatum
<i>Sclerolepis verticillata</i>	guttatum
<i>Polygala paucifolia</i>	acule
<i>lutea</i>	candidum
<i>Drosera linearis</i>	<i>Goodyera pubescens</i>
* <i>intermedia</i>	* <i>Narthecium ossifragum</i>
* <i>rotundifolia</i>	<i>Struthiopteris germanica</i>

Kinds that like rich, loamy soil, and being kept constantly

very moist:—

<i>Criatum capense</i> and vars.	<i>Hydrocotyle nitidula</i>
* <i>Caltha palustris</i> and fl.-pl.	<i>microphylla</i>
<i>leptosepala</i>	<i>moschata</i>
* <i>radicans</i>	<i>Lobelia sylvatica</i>
* <i>Epipactis palustris</i>	<i>Primula sikkimensis</i>
* <i>Orcis laxiflora</i>	Munroi
<i>foliosa</i>	* <i>Sagittaria sagittifolia</i> , var. fl.-pl.
* <i>latifolia</i>	<i>Funcularium rotatum</i>
* <i>palustris</i>	* <i>Pinguicula grandiflora</i>
<i>Myosotis palustris</i>	* <i>vallisnericifolia</i>
<i>Polygonum Brunonis</i>	* <i>vulgaris</i>
<i>Lathyrus palustris</i>	<i>Suaeda perennis</i>
<i>Tulbaghia allicacea</i>	* <i>Viola palustris</i>
<i>Symplocarpus foetidus</i>	* <i>Parnassia palustris</i>
* <i>Chrysosplenium oppositifolium</i>	<i>asarifolia</i>
* <i>alternifolium</i>	<i>canadiana</i>
<i>Drosera bifloris</i>	* <i>Alisma Plantago</i>
<i>Gratiola officinalis quadridentata</i>	<i>Villarsia ovata</i>
* <i>Campanula hederacea</i>	* <i>reniformis</i>
<i>Corynephorus nudata</i>	<i>alpina</i>
* <i>Leucojum aestivum</i>	* <i>hustanica</i>
<i>Hydrocotyle bonariensis</i>	

The following are tall-growing kinds, all of which thrive in rich loamy soil, except those marked thus †, which require peaty soil:—

* <i>Butomus umbellatus</i>	<i>Tradescantia virginica</i>
<i>Hibiscus palustris</i>	<i>Scirpus lacustris</i>
<i>moscheutos</i>	<i>Equisetum Telmateia</i> , and others
<i>militaris</i>	* <i>Carex pendula</i>
<i>Gunnera scabra</i>	* <i>riparia</i>
* <i>Lythrum Salicaria</i>	* <i>Arundo Phragmites</i>
<i>alatum</i> , &c.	<i>Bomax variegated</i>
<i>Trises</i> , various	<i>Saxifraga petiata</i>
<i>Senecio japonica</i> (syn. <i>Erythrochaete</i>	<i>Justicia pedunculosa</i>
<i>planatifida</i>)	<i>Saururus cernuus</i>
<i>Eupatoriums</i> , any	<i>Lourei</i>
* <i>Cyperus longus</i>	* <i>Epilobium angustifolium</i>
<i>vegetus</i>	<i>album</i> var.
* <i>Osmunda regalis</i>	<i>Typis</i> , various
* <i>Rumex Hydrolapathum</i>	<i>Pyrethrum scrothum</i>
<i>Eriophorum polystachyum</i> , and other	* <i>Leucanthemum lacustris</i>
kinds	* <i>Spiraea Umaria</i>
<i>Phoridium tenax</i>	* <i>Aster tripollum</i>
* <i>Epilobium hirsutum</i> , &c.	* <i>Lilium canadense</i>
* <i>Lysimachia thysiflora</i>	† <i>pardalinum</i>
* <i>vulgaris</i> , &c.	† <i>Robinsoni</i>

W.

Mistakes.—The "Rural World" in its report of the Missouri Horticultural Society, gives an amusing statement of the mistakes made by the different members as reported by themselves. Mr. Garrett said his mistake was in planting too many kinds of fruits. Esperant said he planted Hale's Early on too rich ground, causing rot. Mustard says his was in setting out too many Pears. Evans in not planting all Ben Davis Apples. Goodman in trying to raise fruit with the nursery business. Slocomb in going into the fruit business at all. Todd in planting too many sorts of Apples.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Selaginella Kraussiana.—"J. L." (p. 250) speaks of *Selaginella Kraussiana* (usually called in gardens *denticulata*) as having proved hardy with him this winter in an unheated house. I presume this is near London, but he does not say. With me the same plant has stood uninjured for three winters past in the open air on a Fern rockery quite unprotected, the thermometer having on one occasion been so low as 8° Fahr.—P. NEILL FRASER, *Rockville, Murrayfield, Edinburgh.*

Golden Feather Pyrethrum.—Where a large supply of this is in request, the most expeditious mode of obtaining it is to make a slight hotbed in a frame or brick pit in spring, and sow its seeds broadcast on finely-sifted soil. Only just cover the seed and keep the lights close until it germinates, when air may be gradually given, and as soon as the young plants are hardened off, the lights may be dispensed with altogether.—J. GROOM.

Tigridia Culture in New Jersey.—In THE GARDEN (p. 142) are some interesting remarks on *Tigridias*. While, however, your correspondent is right on most points, I cannot quite agree with him in some of his cultural directions, and especially when he recommends planting in "a partially shaded position." *Tigridias* do particularly well in my grounds, and I grow many thousands of them every year. The soil in which they are grown is very light and sandy, is manured only moderately, and is dug to a depth of not less than 1 ft. Instead of being best planted in partial shade, *Tigridias*, on the contrary, luxuriate in the broiling heat of our sunny summer weather, which seems to be but seldom, even in the slightest degree, either too hot or too dry for them.—GEORGE SUCH, *South Amboy, New Jersey, U.S.*

Nymphæa scutifolia.—Here, at the Cape of Good Hope, this and *Aponogeton distachyon* grow together; and as the *Aponogeton* has proved to be quite hardy in England, I am inclined to think that *Nymphæa scutifolia* will be found to be equally hardy. Should this on trial prove to be so, the following four plants would form a very pretty group, grown in ornamental water, viz., *Calla æthiopica*, *Nymphæa scutifolia*, *N. alba*, and *Aponogeton distachyon*.—CHARLES AYRES, *Cape Town, South Africa.*

Spring and Summer-blooming Clematises.—Although the spring-flowering varieties of the *Clematis* are yet best known as pot plants, and in this form are very effective for cool conservatory decoration, they are also most beautiful trained on a wire trellis or against a wall, or, indeed, in any place where climbers are at home and will thrive. A wall or fence devoted exclusively to varieties of the *Clematis* would be only half planted if the spring-blooming kinds were not included, as some two months of additional flower are lost if these be not planted. I have one showing flower-buds already. All of this section bloom from the wood of the previous year, and therefore the pruning must be of the most careful description. Only late, weak shoots should be taken out, whilst the strongest should be left and regulated, the points being shortened back very moderately. The summer-blooming kinds flower on the wood of the present season, and the stronger the growth the greater the amount of bloom. The strongest growths invariably spring up from the base of the plant; therefore, the wood of the previous summer should be cut back in the following winter to within 1 ft. or so of the ground. As the spring growths have the first start, these should in all cases be kept close to the trellis or wall, and the young growths of the summer kinds should be carried over them, as they will have to be entirely removed in the winter, whilst the larger portion of the others will remain. These kinds should be planted alternately. I have found that the spring-flowering sorts, through the early ripening of their wood, have proved even harder during the past severe winter than has the summer bloomers, the wood of which is grosser, and therefore less able to withstand hard frost.—A. D.

Myosotis dissitiflora Best from Seed.—This favourite Forget-me-not has suffered much from the severity of the past winter, and will be very late in flowering. I find that seedling plants of it are much more vigorous and altogether better than those raised from cuttings, but, as it is not a free seedling variety, the difficulty lies in getting sufficient seed. The best plan is to plant a quantity of old plants, rather thinly, on a partially-shaded border, when the beds are cleared in May, covering them at once with a small-meshed fish-net to keep linnets and other small birds from the seed; allow the latter to scatter itself on the soil and keep it moist in times of drought. Abundance of seedlings will spring up that will be fit for transplanting in August, and they will make beautiful plants with which to furnish beds for spring display.—J. GROOM, *Linton.*

Sowing Stock Seed.—The frost this year has made a complete clearance of all kinds of Stocks, and as few flowers are more beautiful, either in a cut state or for the decoration of beds or bor-

ders, no time should be lost in getting seeds sown under some kind of glass covering. In a few flower-pots, pans, or boxes, enough plants may be raised for even a large garden, and by the end of April they may be planted out with a fair chance of being unchecked by cold weather. The ten-week varieties are very beautiful for beds or borders, and so are the intermediate kinds, especially the scarlets, purples, and whites. During mild winters established plants flower almost continuously through the year, but this season we must start afresh, and the best way in which to insure continuous blooming is to provide a deeply-trenched, well-fertilised root-run, for Stocks are strong-rooting subjects, and they grow and flower just in proportion to the way in which they are treated.—J. GROOM.

The Edelweiss. This interesting little Alpine has this winter proved to be perfectly hardy, having stood as an edging to a small round bed on the lawn without any protection whatever. It flowered here last year, and as clumps of it are now showing nine or ten crowns each, I hope to see it flower well during the coming season. Here, on the sandstone, it grows vigorously. I may add, that among Alpines in flower we have several varieties of *Hellebores*, *Hepaticas*, and *Aubrietias*, also *Saxifraga virginienensis* and a variety called *atro-purpurea*, one of the Moss section, which, either in or out of flower, is an acquisition on account of its beautiful green foliage and compact habit. Several tufts of *Anemone Pulsatilla* are also now coming into flower, and among *Primulas* we have *P. viscosa*, *P. capitata*, and *P. marginata*. *Cortusa Mathiola* has also got through the winter well.—A. B., *Pusey Gardens, near Faringdon, Berks.*

NEW AND RARE PLANTS.

A FEW NEW OR LITTLE-KNOWN PLANTS.

Aralia californica.—Those who are familiar with *A. racemosa*, a species indigenous to the Eastern States of North America, will readily recognise this, which may be succinctly described as a gigantic form of the plant named, reaching in its adult size a height of from 6 ft. to 8 ft. It is a smooth branching, herbaceous plant, with bipinnate foliage. The flowers, which are small and whitish, are produced in umbels, which are arranged in compound panicles, 1 ft. or 2 ft. long, and are succeeded by five-seeded, deep purple, berry-like fruits. It remains long in bloom, and will be found a useful and effective plant for the wild garden shrubbery, or for any situation requiring a vigorous habit of growth.

Coronilla libanotica.—Several pretty species of this genus are commonly cultivated, and this plant is not unworthy of being associated with them. It is a dwarf herbaceous species, forming a low bushy tuft of slender stems, clothed with neat pinnate foliage, yielding an abundance of flowers in axillary umbels, of a creamy-white colour, fading to pale purple. It blooms the first season from seed, but more strongly the second year, and appears to be perfectly hardy, having stood without protection the recent severe weather.

Delphinium decorum.—Of tall perennial Larkspurs there is happily no lack, but the dwarf species are comparatively restricted in number. This plant can scarcely fail, therefore, to meet with a favourable reception, combining, as it does, a height not much exceeding 1 ft. with rather large, deep blue flowers on long foot-stalks, in an open raceme. The lower leaves are five-lobed, the upper ones with narrow linear divisions. I have no personal experience of this plant, but believe it will be found a perfectly hardy perennial of easy cultivation. The seeds much resemble those of *D. nudicaule* in size and form, and are hardly distinguishable from them. It is a native of California.

Erythrina herbacea.—Coral plants have long been represented in gardens by several fine species, and their beauty is such that they need but one addition to their good points, viz., greater hardiness, to render them the most popular of plants. The well-known *E. cristagalli* and the almost equally familiar *E. laurifolia* are occasionally met with in favoured localities, more or less completely exposed in summer; but even at Kew, they are generally planted in a pit from which the ash is removed in summer, and it is doubtful if they are ever seen in perfection when fully exposed. How far this plant will prove an efficient substitute for the older and better-known species remains to be seen, but, having been found to resist a New York winter, it may be fairly assumed to be sufficiently hardy for open-air cultivation in England, and it is eminently deserving of a trial. It is of rather dwarfer habit than the two species above-named, having a woody root-stock which throws up in summer, under favourable conditions, stems from 2 ft. to 4 ft. high, these stems being of two kinds, one sort bearing leaves only, the other only flowers with a very few leaves. The leaves are trifoliate, each leaflet being triangularly egg-shaped and stalked, and both stems and leaf-stalks are prickly. The flowering stems bear a raceme 1 ft. or 2 ft. long of narrow flowers,

each about 2 in. in length, the deep scarlet standard which in so many genera is erect, being here horizontal and folding over the wings and keel. The seeds are of bright scarlet, resembling those of *E. viarum*, and should be sown on heat as early as practicable, the seedlings being kept in a good frame the first winter. This species is a native of Texas, and is found as far north as Carolina, and westward to Sonora.

Fraxea speciosa.—This has a more robust habit, and bears somewhat larger flowers than *E. Parryi*. It is, like the plant just-named, a biennial of stout erect habit, growing from 3 ft. to 5 ft. high, with nerved leaves, in whorls of four to six, the lowest being 6 in. to 9 in. long, and about 2 in. wide, tapering into a long petiole, the upper ones connate and linear. The flowers are produced in umbel-like pedunculate cymes, the corolla being about 1 in. across, four-parted, rotate, of whitish colour, tinged with blue, and conspicuously dark dotted. At the base of each division are a pair of oblong and strongly-fringed glands with a fringe of eight to ten long bristle-like filaments. This is likely to prove an interesting plant, and will be best raised in a cold frame, the seedlings being subsequently planted out as early as is practicable, to obtain strong growth the first season. The seed may also be tried in the open ground, either with or without the aid of a hand-light. This plant is a native of Western America, from Colorado to California.

Gentiana affinis.—This is a neat sub-alpine species from the Rocky Mountains, with the general habit of growth of *G. pneumonanthe*, and, like it, perfectly hardy. It grows from 1 ft. to 1½ ft. high, with the foliage oblong to lanceolate, rough on the margins, and flowers six to twenty in number, arranged in a leafy spike or thyrsus. The corolla is deep blue, about 1 in. long, and nearly as much across, when expanded. Though less showy than *G. septemfida*, it is a desirable plant, and is quite as easy of cultivation. The seed is best raised in a cold frame, artificial heat being inadvisable with the plants of this genus.

Petalostemon Searlsiae.—The genus *Petalostemon* comprises an interesting group of Leguminosae, occurring chiefly east of the Rocky Mountains, having small pinnate foliage, and small flowers arranged in dense terminal bracteate cylindrical spikes. Two species are occasionally met with, *P. candidum* and *P. violaceum*, but they are scarcely to be found outside botanic gardens. *P. Searlsiae* is of recent discovery, having been first collected on the Pahranagat Mountains in South-eastern Nevada, by Miss Searls, whose name it is appropriately named. It is a perennial plant, with pinnate foliage composed of from five to seven oblong-linear leaflets, which with stem and branches are clothed with large glands, and a long, compact spike of rosy-purple flowers, which, though individually small, produce some effect by their number. It is probably quite hardy, and is deserving of a trial as a border plant, or even on the rockery.

Pentstemon Menziesii.—One distinct early-blooming form of this shrubby species of *Pentstemon*, with tubular pale violet flowers, has long been cultivated in gardens under the name of *P. Scouleri*, but the typical species is either unknown in cultivation or very rare. *P. Menziesii* resembles *P. Scouleri* in having obovate-oblong, toothed foliage, somewhat leathery in texture, often purplish beneath, with flowers of a reddish-purple in terminal one-sided racemes. The anthers are remarkable for being densely covered with long hairs. It is a native of California and the neighbouring States.

Silene pennsylvanica.—Although this pretty species of *Catchfly* is not entirely new to cultivation, seeds have hitherto been unobtainable, and it has consequently been scarce in gardens. It is of dwarf habit, seldom reaching 1 ft. in height, with numerous spreading stems furnished with foliage varying from spatulate to lance-shaped, and bearing rosy-purple flowers in terminal cymes, each blossom being about 1 in. across. When strongly grown, it forms an attractive border plant. It succeeds best in rather light sandy soil, but is not particularly fastidious in its requirements. It will occasionally produce flowers the first year, but more generally it does not blossom till the second season.

Quamoclit hederaefolia.—Under the somewhat loose name of scarlet Ivy-leaved *Ipomaea* *Quamoclit*, this pretty species has been offered by an eminent French firm. It is, however, totally distinct from the common Cypress Vine just named, differing both in its foliage and its inflorescence, the former being pedately five-lobed, and the latter, instead of being axillary and solitary, is produced in terminal clusters or cymes. The fine scarlet tint of the flowers and the profusion with which they are produced compensate for their rather small size. Its stems are very slender, and tinged with purple. It is said to be of very rapid growth, attaining a height of from 6 ft. to 8 ft. in a few weeks, and continues in bloom during the entire summer. It may be treated either as a half-hardy annual, in which case it should be sown under glass or on a hotbed in February or March; or as a hardy annual, the seeds being sown in April or May in the open ground. *Quamoclit hederaefolia* occurs over a wide extent of the South American Continent, and extends even to the West Indies. *Ipswich.* W. THOMPSON.

THE KITCHEN GARDEN.

TOMATOES AND THEIR CULTURE.

TOMATOES are fast rising in favour, and deservedly so, for unquestionably they are among the most useful and wholesome esculents grown. In America and on the Continent, where they are eaten fresh gathered from the plant, they are much more appreciated than they are here. The best-flavoured and most agreeable for eating without being cooked is Carter's Greengage, which, when perfectly ripe, is very handsome-looking, having a clear yellow skin that gives it a most tempting appearance. Last autumn, being fine and dry, Tomatoes were particularly good, and, although they may not be liked at first, one soon acquires a relish for them. It is not many years ago that people would not eat Rhubarb, bundles of which were offered in Covent Garden Market and could not be sold at any price, and yet, as is well known now, the consumption of Rhubarb is enormous. Owing to the more tender nature of the Tomato, and the consequent difficulty and expense of growing it in this country, fruit of it can never be very plentiful or cheap; but, from the free-bearing habit of the plants, and the heavy crop they carry, I see no reason why it should not be offered at a much cheaper rate than it is. Early in the season, when produced under glass, the price must of necessity be high to be remunerative; but later on, when they ripen under the shelter of a wall or fence, or even in the open ground, they ought almost to be within the reach of all. So simple as regards culture, however, are they, that any one having the convenience of any ordinary garden frame to raise the plants in may grow a supply for themselves, as any building facing the sun will do to train them on, or they may be planted out in any warm border and supported by stakes, or be allowed to trail over the ground with their fruit resting on a few tiles or pieces of slate. These will keep them clean and by the warmth absorbed from the solar rays help to ripen the crop. To aid in doing this, it is necessary to trim out the superfluous branches, that the clusters of Tomatoes may have full and free exposure, light being essential not only to give them colour, but to impart flavour.

There are thousands of amateurs who, though not having much room, are in possession of small houses in which they winter their bedding plants, and when these are turned out, in nine cases out of ten these structures stand idle during the summer, but if filled with Tomatoes they might be very ornamentally furnished, and a heavy yield might be obtained. Nothing can possibly be more easy to manage, as the chief attention they require is plenty of water and the thinning already alluded to; if they get this and a tie occasionally to prevent their falling about, they are sure to do, for they are in no way subject to insects, or liable to get injured by inattention in the way most other plants are. What they like is plenty of air during the day to aid in setting the fruit, and once the crop is secured, an abundance of moisture at the root to assist in swelling it off. Soap-suds, or any mild sewage of that kind, proves most acceptable to the plants after they have filled their pots or boxes with roots, as does also soot or guano water, and if assistance be given in this way it matters little what soil is used, as they are sure to grow quite strong enough during the earlier stages of their existence, and up to the time when the fruits begin to swell. If it can be managed they do best trained to strained wires within 1 ft. or so of the glass after the manner of Vines or Cucumbers, in which way the huge clusters of fruit, hanging beneath the foliage, have a very ornamental appearance. Not only may Tomatoes be grown to perfection in this way or in pots in

any backyard, but they do well in boxes outside of windows, where trailing down or tied to a trellis they are objects of great beauty and utility.

To have them strong and fit for turning out-of-doors at the end of May, seed should be sown at once, and placed in any warm house or frame to induce it to germinate. Once up, it is necessary that the pot or pan containing it be stood near the glass where the plants can obtain plenty of light, otherwise they soon draw up weakly, as they do also if allowed to remain thickly together. It is best, therefore, as soon as they are large enough to handle, to pot them separately, or two in a 5-in. pot, from which they can be shifted on when they require more room. If they are intended to be turned out against a wall or on an open border, it should not be done till quite the end of May, and then only after the plants have been previously hardened, they being, when young, very tender and exceedingly susceptible of frost. For growing in houses or any spare pits or frames, the object should be to get them into a fruit-bearing state as quickly as possible, for, however early they commence they always keep on till destroyed by cold in the autumn, so that there is no fear of them ceasing to give a supply through exhaustion. The best kind to grow for culinary purposes is Hathaway's Excelsior, a fine large red sort almost as smooth and round as a ball. S. D.

York Regent Potato.—Having known this variety ever since I can remember, I am confident that it is not a Dalmahoy, although, perhaps, there is not difference enough between them to give them separate names at Chiswick. In the west of England the York Regent is grown largely under several names, such as Early Orange, Early Knotts, Early Frame, &c., but it is always a second early, and generally sells well after the Ashleaves are over; but the haulm of the Dalmahoy, as grown by Mr. Scott, at Merriott, from Scotch seeds, is at least three weeks later in dying off, and the tubers in shape are very like the Victoria, but the skin is rougher, and the Potatoes, when seen in quantity, are rounder than those of that variety, though a few tubers may be mistaken for those of the Victoria.—HENRY FARR, *Bushey Grove*.

Dwarf Peas Unprofitable.—I fear that those who follow "A. D.'s" advice (p. 255), and sow such Peas as First Crop, Maclean's Wonderful, Laxton's Omega, Princess Royal, Premier, Veitch's Perfection, and others, with the intention of growing them well, or in any form to secure a crop without sticks, will find themselves greatly disappointed. Not one of the Peas just mentioned grows dwarfer than 2½ ft., and some of them, such as Princess Royal, attains the height of 5 ft. under ordinary cultivation. I have found, and I have no doubt others have done the same, that no Pea over 18 in. can be properly grown without sticks, and when they attain a height of 4 ft. or 5 ft. they require a great many sticks to support them. To grow Peas requiring no sticks, and be thoroughly on the safe side, Premium Gem, Little Gem, Maclean's Blue Peter, and Tom Thumb can be recommended. I have never found any of these to exceed 15 in. in height, and the crop which they produce is surprising for their size. But, at the same time, I may just say that I am not in favour of dwarf Peas at any time or in any garden, as they yield so very little in proportion to tall-growing kinds. After gathering one good dish from dwarf Peas, the best and most of the produce will have been secured; but tall-growing sorts generally yield a long succession of dishes, and to such an extent is this the case that I would recommend all to grow only the tall varieties of Peas. Where sticks cannot be secured for them, it will be found to pay hand-somely in the end to buy wire hurdles for them. These will last any one's lifetime, and they answer the purpose for which they are intended capably. We grew dwarf Peas here at one time, so as to test them thoroughly, but we have now quite given them up as unprofitable.—CAMERIAN.

New Plan of Preventing Lettuces Running to Seed.—The best heads of Lettuces often run to seed and become unfit for table. A German paper says this can be avoided by drawing a knife through one-half of the stem to which the head is attached. The sap, or, as it is called in Germany, the milk, will flow and rob the head of the power to open, yet enough sap will still remain to keep it fresh and growing for another week or so.

GARDEN DESTROYERS.

THE GOAT MOTH.

(COSSUS LIGNIPERDA.)

THIS insect, which is one of our largest moths, is very destructive, when in the caterpillar state, to various trees by boring long galleries in their stems and branches, which soon reduces them, particularly in the case of young trees, into an unhealthy condition, thus rendering them more liable to the attacks of various other insects; this is especially the case with Elms, which are very often attacked by Scolyti when in an unsound condition. The branches of trees bored by this insect are often so much weakened that they are very liable to be broken off by a high wind. The caterpillars have been found in the following trees, viz., Apple, Plum, Walnut, Oak, Ash, Willow, Poplar, Beech, and Lime; but they are much more common in the softer-wooded trees, such as the Willow and Poplar, than in the others. There are, unfortunately, but few means of destroying this insect. The moth may be found resting on the stems of trees during the day-time, but, though they are

so large, they are very difficult to find, as they much resemble the stems in colour. As the caterpillar usually passes the whole of its life within the wood of the tree, it generally escapes detection until its presence is betrayed by some portion of the tree flagging. If this part be carefully examined, a hole will always be found from which a mixed with small sawdust-like pieces of wood (the excrement of the caterpillars) is exuding; at times the neighbourhood of the insect may be detected by its strong and peculiar goatly smell. It is on account of this smell that this insect has been given the name of goat moth. Perhaps the best means of

stopping the ravages of the caterpillar is to cut off the bough, when practicable, in which it is, and then to destroy it; at times, by enlarging the entrance to the hole, the caterpillar may be killed by means of a long wire. Tobacco-smoke blown into the hole has been suggested as a means of dislodging the insect, but I am not aware if it has been tried with good effect. When in the chrysalis state they are quite as difficult to destroy, as they nearly always pass this period of their existence within the tree. The goat moth generally emerges from the chrysalis in June or July. The female soon afterwards lays her eggs, which are very numerous, from 700 to 1000; these are deposited beneath the outer bark of a tree by means of a strong ovipositor; by far the greatest number of these eggs are probably destroyed by some small parasitic insect, or there must be a great mortality amongst the young caterpillars, as few comparatively attain maturity. The newly-hatched caterpillars do not at once eat their way into the hard wood of the tree, but for the first year content themselves with the more sappy portion of the tree. They seldom or never leave their

galleries unless they cannot obtain the required amount of nourishment, or have been in some way disturbed. They do not attain their full size until they are nearly three years old, during which period they have changed their skins seven times. Besides the unpleasant smell which these insects always emit, they discharge a very strong-smelling liquid from their mouth, which is probably of some use in softening the wood. They are very strong, as the following experiment, made by a naturalist, will show:—One was placed under a bell-glass, weighing $\frac{1}{2}$ lb. (more than ten times the weight of the insect); this it raised with the greatest ease. A book weighing 4 lb. was then placed on the glass, and even with this weight in addition it raised the glass and escaped. The shape of the glass somewhat favoured the caterpillar wedging it up, as it were, with its head. Lyonnet has made a very interesting study of the anatomy of this caterpillar, and has found that its head contains 228 muscles, its body 1647, and its stomach and intestines 2186.

Some naturalists have tried to identify this caterpillar with the Cossus of the Roman *gourmets*, but one can hardly imagine any one eating an insect with such a strong unpleasant smell, unless they were starving. When about to assume the chrysalis state the caterpillar forms a rough cocoon, composed of small pieces of wool and silk thread, round itself, near the entrance to its hole, within which it undergoes its change. Occasionally, however, the cocoons are formed in the earth at the foot of the tree. The moth measures from 3 in. to 3½ in. across the wings when they are fully expanded; its body is stout and large, and about 1½ in. long. The males are somewhat smaller than the females, and their antennæ more deeply toothed. The general colour of both sexes is brownish-grey, more or less dark;

The Goat Moth (*Cossus ligniperda*).

the body is striped with alternate transverse dark and pale bands. The upper wings are mottled with blackish-brown, and covered with innumerable small wavy, transverse lines of the same colour, with several dark bands of various lengths near the tips interspersed with various lighter patches; the lower wings are dark grey with darker markings, which are much less distinct than those on the upper wings. The full-grown caterpillars are about 4 in. in length, and nearly as thick as the finger. The head is black, and is furnished with a strong pair of jaws; the entire insect is very sparsely covered with short hairs. The chrysalis is yellowish with very well-defined joints, on the back of each of which are two transverse rows of short spines, of a darker colour, which point towards the tail; by means of these spines the chrysalis is able to work its way out of the cocoon and to the entrance of the hole, when the perfect insect is matured within it; the moth having escaped from the chrysalis case crawls on to the stem of the tree, leaving the empty case, as a general rule, at the entrance of the hole.

S. G. S.

THE GARDEN IN THE HOUSE.

PLATE CLXXV.

AQUATICS IN BASINS.

THERE is an impression abroad that it is only those who have regular hothouse aquariums who can grow tender aquatics. This, however, is not the case, as there are numbers of handsome-leaved or flowering subjects that may be grown successfully even in basins. The beautiful *Nymphaea odorata* I first became acquainted with in a shallow milk basin that stood during the summer on one of the shelves of a stove, and well the plant grew and flowered. We give the names of a few of the species that may be cultivated in basins, with some particulars regarding their culture. The one we have named above is one of the best, as it is not of the strongest habit, and can easily be accommodated in a large milk basin; if considerably larger all the better. It may either be planted in a layer of soil laid in the bottom of the basin, or it may be potted in a 6-in. pan, which should be submerged a few inches below the rim of the basin. The flowers are white and deliciously scented. It will grow either on a sunny, warm shelf in a greenhouse during summer, or in a stove or in favourable localities outdoors. The basin should be kept full of water, and, to prevent a green scum forming on the surface, fresh and clean soft water should be added weekly by pouring it into the basin through a coarse-running rose until the scum has been run off over the sides. The object of giving the water through a rose instead of a spout is to prevent the soil from being stirred and making the water muddy. Another grand subject is the *Nymphaea candidissima*, the flowers of which are amongst the best of subjects for decoration in a cut state. The plant grows well enough out-of-doors, but it does not flower freely except in favourable localities, unless warm water be run into the tank daily to keep the temperature of the water above the normal figure. Where the waste water from a hot-water tank was allowed to run into an outdoor tank in which this *Nymphaea* was planted, we have known it to do well and flower most profusely during the summer, while in another tank in the same garden, but not so heated, the growth was equally strong and vigorous, but flowers were scarce. And this applies to most of the exotic aquatics grown in garden ponds and pools, which, as often as otherwise, might be heated at very little expense or trouble. When grown in a basin *N. candidissima* requires a pretty large one, 2 ft. inside at least, and if wider all the better. As it requires rather deep water, too, it cannot very well be potted, but should be planted out in the bottom of the basin. The same directions apply to the beautiful *Aponogeton distachyon*. It, too, likes deep water and room for the spread of its leaves. It is a rapid-growing plant, and is soon up and in flower. A plant of ours, grown in a basin under a frame with other aquatics, was in flower this spring in less than three weeks after the root had been planted. The beautiful pearly-white flowers are so deliciously and strongly scented, that the perfume of one flower pervades a whole structure. The foliage of the plant is also pretty and interesting, and in the still atmosphere of a glass house the leaves arrange themselves beautifully on the surface of the water, always keeping their upper surface perfectly dry and clean. Flowering aquatics that it is desirable to cultivate in the way here described are necessarily limited, and of the hardier species the above three are the best, but there are one or two hot-house *Nymphaeas* that may be added to the list. These are *Nymphaea Devoniana* and *N. cerulea*. The first has beautiful crimson and the last blue flowers; both are beautiful varieties. They however need a stove heat or a temperature between a stove and a greenhouse, otherwise they require the same treatment as the others. As to general treatment, all the species named should have a position near the glass and abundance of light; the more sunshine the plants receive the better they will grow and flower; shade ruins the plants. The sunny side of a greenhouse or stove is the best place for them, but for the first-named a cold frame is as good as anything. Of course, where these grow well enough outdoors there is no need to grow them under glass, but all are natives of much warmer countries than ours, and they enjoy a high temperature and produce cleaner and finer flowers under glass. We have seen the whole of them grown splendidly in a Victoria tank, where the temperature was much above their requirements; besides, when grown under glass the plants can be had in flower much earlier in the year, and later also. As regards winter treatment, it is not necessary to keep the plants in the house except when they are growing. For convenience the water may be poured off about November, and the plants may be taken out and laid in soil in any corner where the light is not entirely excluded; if they are kept moist they will keep well enough and begin to push in spring, when they may be again planted in the basins. Of course, the different species must be kept in a suitable temperature. The hardy sorts will do anywhere where they are safe from frost, and the stove plants may be placed in any corner of that structure.

CHEF.

ROSES JEAN LIABAUD AND M. E. Y. TEAS.

Drawn by ALFRED PARSONS.

ON a pleasant morning in June I left my hotel in one of the squares of Lyons, and travelled by the short tunnel railway at an angle of 45° to the manufacturing district of La Croix-Rousse. Here, high above the rest of the city, I looked down on the fine streets and squares which lie in the angle of the two rivers, the Rhône and Saône, which meet just below the town. Up through the main street, the old-fashioned garden of M. Jean Liabaud is reached, the raiser of the dark Rose illustrated in the accompanying plate. Here I had a hearty welcome, and was shown M. Liabaud's best Roses, seedlings and others, amongst them Jean Liabaud. We owe to M. Liabaud two or three distinct families of Hybrid Perpetuals, the very dark race of which his Monsieur Boncenne and Baron de Bonstettin were the first, culminating in this splendid Rose, Jean Liabaud, now figured, which is really well represented in everything but in form, which is hardly good enough, the petals being usually more evenly arranged than in the flower from which the drawing was prepared. Elie Morel, Marquis de Mortemart, and Anna Alexieff are some of M. Liabaud's seedlings, but it is the race of which the best representation is here given, for which we are most indebted to M. Liabaud, containing, as it does, the fine climbing Roses named above. His Roses are good, and his description of them never too ornate. M. E. Y. Teas is, perhaps, the finest-shaped of any of the Hybrid Perpetuals, and no prettier sight can be seen in the Rose nursery than rows of this beautiful kind in full bloom. Nearly every flower is perfect, and the difficulty is, when cutting for exhibition, to choose the most beautiful. Would it were rather more vigorous, says the Rose grower; but, alas! how few things are perfect. It is very free flowering, and is richly scented. The raiser of it is M. Eugène Verdier, of Paris, to whom we are indebted for many good Roses.

Cheshunt, Herts.

GEORGE PAUL.

MR. WM. MORRIS ON THE ART OF THE FUTURE.*

I WISH people to understand that the art we are striving for is a good thing that all can share, that will elevate all; in good sooth if all people do not soon share it, there will soon be none to share; if all are not elevated by it mankind will lose the elevation it has gained. Nor is such an art as we long for a vain dream; such an art once was in times that were worse than these; when there was less courage, kindness, and truth in the world than there is now; such an art there will be hereafter when there will be more courage, kindness, and truth, than there is now in the world. Let us look backward in history once more for a short while, and then steadily forward till my words are done.

I began by saying that part of the common and necessary advice given to art students was to study antiquity; and no doubt many of you, like me, have done so; have wandered, for instance, through the galleries of the admirable museum of South Kensington, and, like me, have been filled with wonder and gratitude at the beauty which has been born from the brain of man. Now, consider, I pray you, what these wonderful works are, and how they were made; and, indeed, it is neither in extravagance nor without due meaning that I use the word wonderful in speaking of them. Well, these things are just the common household goods of those past days, and that is one reason why they are so few and so carefully treasured. They were common things in their own day, used without fear of breaking or spoiling—no rarities then—and yet we have called them wonderful. And how were they made? Did a great artist draw the designs for them—a man of cultivation, highly paid, daintily fed, carefully housed, wrapped up in cotton wool, in short, when he was not at work? By no means. Wonderful as those works are, they were made by "common fellows," as the phrase goes, in the common course of their

* From an Address to the Students of the Birmingham Society of Arts school of Design, delivered on February 19.

daily labour. Such were the men we honour in honouring those works. And their labour—do you think it was irksome to them? Those of you who are artists know very well that it was not; that it could not be. Many a grin of pleasure, I'll be bound—and you will not contradict me—went to the carrying through of those mazes of mysterious beauty, to the invention of those strange beasts and birds and flowers that we ourselves have chuckled over at South Kensington. While they were at work, at least, these men where not unhappy, and I suppose they worked most days, and the most part of the day, as we do. Or those treasures of architecture that we study so carefully nowadays—what are they? How were they made? There are great minsters among them, indeed, and palaces of kings and lords, but not many; and, noble and awe-inspiring as these may be, they differ only in size from the little grey church that still so often makes the commonplace English landscape beautiful, and the little grey house that still, in some parts of the country at least, makes an English village a thing apart to be seen and pondered on by all who love romance and beauty. These form the mass of our architectural treasures, the houses that everyday people lived in, the unregarded churches in which they worshipped. And, once more, who was it that designed and ornamented them? The great architect, carefully kept for the purpose, and guarded from troubles? By no means. Sometimes, perhaps, it was the monk, the ploughman's brother; oftener, his other brother, the village carpenter, smith, mason, whatnot—a common fellow, whose common every day labour fashioned works that are to-day the wonder and despair of many a hard-working "cultivated" architect; and did he loathe his work? No, it is impossible.

I have seen, as we most of us have, work done by such men in some out-of-the-way hamlet—where to-day even few strangers ever come, and whose people seldom go five miles from their own doors—in such places, I say, I have seen work so delicate, so careful, and so inventive, that nothing in its way could go further. And I will assert, without fear of contradiction, that no human ingenuity can produce work such as this without pleasure being a third party to the brain that conceived and the hand that fashioned it. Nor are such works rare. The throne of the great Plantagenet or the great Valois was no more daintily carved than the seat of the village mass-john or the chest of the yeoman's good wife. So you see, there was much going on to make life endurable in those times. Not every day, you may be sure, was a day of slaughter and tumult, though the histories read almost as if it were so, but every day the hammer clinked on the anvil, and the chisel played about the Oak beam, and never without some beauty and invention being born of it, and consequently some human happiness.

That last word brings me to the very kernel and heart of what I have come here to say to you, and I pray you to think of it most seriously—not as to my words, but as to a thought which is stirring the world, and will one day grow into something. That thing which I understand by real art is the expression by man of his pleasure in labour. I do not believe that he can be happy in his labour without expressing that happiness; and especially is this so when he is at work at anything in which he especially excels. A most kind gift is this of Nature, since all men, nay, it seems all things, too, must labour, so that not only does the dog take pleasure in hunting, and the horse in running, and the bird in flying, but so natural does the idea seem to us that we imagine to ourselves that the earth and the very elements rejoice in doing their appointed work; and the poets have told us of the spring meadows smiling, of the exultation of the fire, of the countless laughter of the sea. Nor until these latter days has man ever rejected this universal gift, but always, when he has not been too much perplexed, too much bound by disease or beaten by trouble, has striven to make his work at least happy. Pain he has too often found in his pleasure, and weariness in his rest, to trust to these. What matter if his happiness lie with what must be always with him—his work? And, once more, shall we who have gained so much forego this gain, the earliest, most natural gain of mankind? If we have to a great extent done so, as I verily fear we have, what strange fog-lights must have misled us; or rather let me say, how hard pressed we must have been in the battle with the evils we have overcome, to have forgotten the greatest of all evils. I cannot call it less than that. If a man has work to do that he despises, that does not satisfy his natural and rightful desire for pleasure; the greater part of his life must pass unhappily and without self-respect. Consider, I beg of you, what that means, and what ruin must come of it in the end. Oh, if I could only persuade you of this, that the chief duty of the civilised world to-day is to set about making labour happy for all, to do its utmost to minimise the amount of unhappy labour—nay, if I could only persuade some two or three of you here present—I should have made a good night's work of it.

Do not, at any rate, shelter yourselves from any misgiving you may have behind the fallacy that the art-lacking labour of to-day is happy

work—for the most of men, it is not so; it would not take long, perhaps, to show you that the would-be art which it produces is joyless. But there is another token of its being most unhappy work, which you cannot fail to understand at once—a grievous thing that token is—and I beg of you to believe that I feel the full shame of it as I stand here speaking of it; but if we do not admit that we are sick, how can we be healed? This hapless token is that the work done by the civilised world is mostly dishonest work. Look now; I admit that civilisation does make certain things look well, things which it knows, consciously or unconsciously, are necessary to its present unhealthy condition. These things, to speak shortly, are chiefly machines for carrying on the competition in buying and selling, called falsely commerce, and machines for the violent destruction of life—that is to say, materials for two kinds of war, of which kinds the last is no doubt the worst, not so much in itself, perhaps, but because on this point the conscience of the world is beginning to be somewhat pricked. But on the other hand, matters for the carrying on of a dignified daily life, that life of mutual trust, forbearance, and help, which is the only real life of thinking men—these things the civilised world makes ill, and even increasingly worse and worse. If I am wrong in saying this, you know well I am only saying what is widely thought, nay widely said, too, for that matter.

It is quite true, and very sad to say, that if anyone nowadays wants a piece of ordinary work done by gardener, carpenter, mason, dyer, weaver, smith, what you will, he will be a lucky rarity if he get it well done. He will, on the contrary, meet on every side with evasion of plain duties, and disregard of other men's rights; yet I cannot see how the British working man is to be made to bear the whole burden of this blame, or indeed the chief part of it. I doubt if it is possible for a whole mass of men to do work to which they are driven, and in which there is no hope and no pleasure, without trying to shirk it—at any rate, shirked it has always been under such circumstances. On the other hand, I know that there are some men so right-minded that they will, in despite of irksomeness and hopelessness, drive right through their work. Such men are the salt of the earth. But must there not be something wrong with a state of society, which drives these into that bitter heroism, and the most part into shirking, into the depths often of half-conscious self-contempt and degradation. Be sure there is. That the blindness and hurry of civilisation as it now is have to answer a heavy charge as to that enormous amount of pleasureless work—work that tries every muscle of the body and every atom of the brain, and which is done without pleasure and without aim—work that everybody who has to do with it tries to shuffle off in the speediest way that dread of starvation or ruin will allow him. I am as sure of one thing as that I am living and breathing, and it is this: that the dishonesty in the daily acts of life, complaints of which are in all men's mouths and which I can answer for it does exist, is the natural and inevitable result of the world, in the hurry of the war of the counting-house and the war of the battle-field having forgotten—of all men, I say, each for the other, having forgotten that pleasure in our daily labour which Nature cries out for as its due. Therefore, I say again, it is necessary to the further progress of civilisation that men should turn their thoughts to some means of limiting, and in the end of doing away with degrading labour.

I do not think my words hitherto spoken have given you any occasion to think that I mean by this either hard or rough labour. I do not pity men much for their hardships, especially if they be accidental, not necessarily attached to one class or one condition, I mean. Nor do I think (I were crazy or dreaming else) that the work of the world can be carried on without rough labour, but I have seen enough of that to know that it need not be by any means degrading. To plough the earth, to cast the net, to fold the flock—these, which are rough occupations enough, and which carry with them many hardships, are good enough for the best of us, certain conditions of leisure, freedom, and due wages being granted. As to the bricklayer, the mason, and the like—these would be artists, and doing not only necessary but beautiful and therefore happy work, if art were anything like what it should be. No, it is not such labour as this which we need to do away with, but the toil which makes the thousand and one things that nobody wants, which are used merely as the counters for the competitive buying and selling falsely called commerce, which I have spoken of before—I know in my heart, and not merely by my reason, that this toil cries out to be done away with. But besides that, the labour which now makes things, good and necessary in themselves, merely as counters for the commercial war aforesaid needs regulating and reforming. Nor can this reform be brought about save by art; and if we were only come to our right minds, and could see the necessity for making labour sweet to all men, as it is now to very few—the necessity, I repeat, lest discontent, unrest, and despair at last swallow up all society. If we, then, with our eyes cleared, could but make some sacrifice of things which do us now no good, since we unjustly and uneasily possess them, then indeed I believe

we should sow the seed of a happiness which the world has not yet known, of a rest and content which would make it what I cannot help thinking it was meant to be, and with that seed would be sown also the seed of real art, the expression of man's happiness in his labour—an art made by the people, and for the people, as a happiness of the maker and the user. That is the only real art there is, the only art which will be an instrument to the progress of the world, and not a hindrance.

I believe there are two virtues much needed in modern life, if it is ever to become sweet; and I am quite sure they are absolutely necessary in the sowing the seed of an art which is to be made by the people and for the people, as an happiness for the maker and the user. These virtues are honesty and simplicity of life. To make my meaning clearer I will name the opposing vice of the second of these—luxury—to art. Also I mean by honesty, the careful and eager giving his due to every man, the determination not to gain by any man's loss, which in my experience is not a common virtue. But note how the practice of either of these virtues will make the other easier to us. For if our wants are few, we shall have but little chance of being driven by our wants into injustice; and if we are fixed in the principle of giving every man his due, how can our self-respect bear that we should give too much to ourselves? And in art, and in that preparation for it without which no art that is stable or worthy can be, the raising, namely, of those classes which have heretofore been degraded, the practice of these virtues would make a new world of it. For if you be rich your simplicity of life will both go towards smoothing over the dreadful contrast between waste and want, which is the great horror of civilised countries, and will also give an example and standard of dignified life to those classes which you desire to raise who, as it is, indeed, being like enough to rich people, are given both to envy and to imitate the idleness and waste that the possession of much money produces. Nay, and apart from the morality of the matter, which I am forced to speak to you of, let me tell you that though simplicity in art may be costly as well as uncouth, at least it is not wasteful, and nothing is more destructive to art than the want of it. I have never been into any rich man's house which would not have looked the better for having a bonfire made out-side of it of nine-tenths of all that it held. Indeed, our sacrifice on the side of luxury will, it seems to me, be little or nothing, for as far as I can make out what people usually mean by it, it is a gathering of possessions which are but sheer vexations to the owner, or a chain of pompous circumstances which checks and annoys the rich man at every step. Yes, luxury cannot exist without slavery of some kind or other, and its abolition will be blessed like the abolition of other slaveries, by the freeing both of the slaves and their masters. Lastly, if, besides attaining to simplicity of life, we attain also to the love of justice, then will all things be ready for the new spring time of the arts. For those of us who are employers of labour, how can we bear to give any man less money than he can decently live on, less leisure than his education and self-respect demand; or those of us who are workmen, how can we bear to fail in the contract we have undertaken, or to make it necessary for a foreman to go up and down spying out our mean tricks and evasions; or we the shopkeepers, can we endure to lie that we may shuffle off our losses on to someone else's shoulders; or we the public, how can we bear to pay a price for a piece of goods which will help to trouble one man, to ruin another, and starve a third; or, still more, I think, how can we bear to use, how can we enjoy something which has been a pain and a grief for the maker to make?

TREES, SHRUBS, AND WOODLANDS.

THE ROYAL FORESTS.

DURING the last few years much has been written respecting these Crown lands which is in the highest degree misleading. Such paragraphs as the one from "Truth," which was lately printed in your columns would make it appear that the small income derived from these valuable possessions of the State is the result of mismanagement on the part of the Commissioners entrusted with the care of them. This illusion is quickly dispelled by a careful examination of the "Report of Her Majesty's Wood, Forest, and Land Revenues," which was printed by order of the House of Commons in July, 1878. Leaving out of consideration the Royal park and woods at Windsor, which, as the surroundings of a Royal residence, the abode of Her Majesty, are as much a national duty to maintain in the highest state of order as any of the public parks in the metropolis, the other forests might soon become by wise legislation sources of vastly increased national profit. But the half-hearted measures adopted for some years past have so hampered the action of the Commissioners, that in spite of the most earnest protests on their part, they are compelled to look on while year after year the property of the State

is sacrificed to private interests. That this is not allowed to pass without protest is shown by the able report of Commissioner Howard, who, in speaking of the laws at present regulating the management of the New Forest, characterises their effect as "producing a gratuitous transfer of the property of the State to private landowners—a measure neither supported by precedent nor founded upon principle," and in this sentence lies the gist of the whole matter.

The total area of the New Forest is 91,000 acres, 2,000 of which are the property of the Crown absolutely, and 26,000 acres belong to private landowners, but are subject to the Crown's forestal rights. This leaves about 63,000 acres to be dealt with by the Commissioners. From this the income of the past year amounted to about £12,000, while the expenditure was about £10,000. Before the introduction of the Bill of 1851, the Crown was entitled to the soil and freehold of the 63,000 acres and to forestal rights, as well as to powers of enclosure for planting and powers of management. When the trees within the enclosures were "past danger of browsing of deer, cattle, or other prejudice," they were to be laid open and an equivalent quantity of land enclosed. At the same date the rights possessed by the commoners were (1) rights of pasturage; (2) of feeding pigs on the Mast; (3) of turbarry or cutting turf; (4) of fuel and marl. These rights they could exercise for about six months in the year. By the Bill of 1851, the rights of the Crown to keep deer in the Forest were extinguished, and as an equivalent it was allowed to enclose 10,000 acres in addition to 6,000 acres which were previously enclosed. The expenses of making and maintaining such enclosures were to be met by the sale of decaying trees, or any other trees not adapted for shipbuilding. The Crown was thus supposed to be possessed of a "rolling power" by which it could continue to enclose and throw open from year to year, always provided that no enclosure was less than 300 acres exclusive of roads.

Though the Crown thus resigned the valuable right of keeping deer, up to the present time only about one-half the land allowed by law to be planted as an equivalent has been actually enclosed and planted, or about 5000 acres; and even in this such difficulties had arisen, and such obstacles were encountered that a Select Committee was appointed in 1868 to inquire into the operations of the Act, and they recommended the allotting to the Crown of certain portions of the forest in fee free from all common rights, the rest to be left for the unrestricted use of the commoners. Following this, a resolution of the House of Commons in 1871 directed that, pending legislation on the forest, no ornamental timber should be felled, no enclosures made, and, in short, nothing cut save for purposes of thinning existing plantations, executing repairs, and satisfying the fuel rights of the commoners.

Another Select Committee was appointed in 1875, and passed the following resolutions: 1.—That the forest remain open and uninclosed, except to the extent of the Crown's right to plant trees. 2. That the ancient woods, trees, and scenery be carefully preserved. 3. That powers of enclosure be exercised only on the area which has been hitherto taken in at various times. 4. That the Crown retain the power of keeping the 16,000 acres of growing timber and trees at all time under inclosure, but that the rolling power over the open part of the forest should cease. 5. That a nominal quit-rent be charged by the Crown to the commoners for the exercise of the right of common during fence months and winter heyning. These are the resolutions bearing more immediately upon the subject. The Crown claims, and undoubtedly possesses, the right of making successive plantations over the whole 63,000 acres, with the limitation that not more than 16,000 were to be enclosed at any one time. The old woods cover about 5000 acres, which are reduced every year to meet the fuel rights of the commoners. By the above resolutions the valuable rights of the State over between 40,000 and 45,000 acres are extinguished, and the commoners are given the rights of pasturage for twelve months instead of six months, as formerly, for which the State is to receive no compensation, except the nominal quit-rent. As a protest against this spoliation, the Commissioner, in his Report, says: "I submit to your lordships that it cannot be to the interest of the public that new or enlarged private rights should be created over the property of the State."

In the operations of these resolutions of the Select Committees, and not in any mismanagement by Crown Commissioners, are to be found the reasons for the very small returns made from these valuable Crown lands. An Act of Parliament defining and limiting the rights of the commoners, and maintaining the rights of the State would strengthen the hands of the Commissioners, and enable them to realise an income more commensurate with the actual value of the land, whether for agricultural or arboricultural purposes. Or, should a severance take place, the area allotted to the Crown would at once be placed under such scientific treatment as would make it a valuable school for young foresters, and eventually an important addition to the income of the State.

A. J. BURROWS.

THE CLIMBING HYDRANGEA.

(SCHIZOPHRAGMA HYDRANGEOIDES.)

SUBJOINED is a representation of this new Japanese climber, referred to in THE GARDEN (p. 237), which, although much reduced in size, affords a good idea of the general aspect of the plant. As will be seen, the leaves are somewhat heart-shaped in outline, and as deeply toothed as those of the common Nettle, and their maximum size appears to be about 4 in. in length and 2½ in. in width. In habit the plant apparently resembles the common Ivy, and, like it, emits throughout the whole length of the branches an abundance of roots, which cling to a wall or the sides of a pot with considerable tenacity. The flowers are white, and, though somewhat small, are produced in such profusion as to give the plant a pretty appearance, accompanied by their small floral leaves. It exists in several collections in this country, and doubtless will soon



The Climbing Hydrangea (*Schizophragma hydrangeoides*).

become common, as it is one of the easiest plants to propagate, merely requiring the branches to be cut into short lengths, pegged to the soil, and treated as cuttings of ordinary hardy perennials. It is probably perfectly hardy, as during the past winter it has been quite frozen. It is now, however, growing vigorously, but, as a rare plant, it necessarily received the protection of a hand-light for the sake of precaution. As a wall or trellis climber it will doubtless become valuable, and if, by cultivation, the flowers become sterile, and thereby the petals or sepals enlarged, as is seen in its congeners, the Hydrangea and Viburnum, it will, indeed, be a desirable acquisition. It inhabits woody districts at considerable elevations on the mountains of Japan, and, therefore, most probably partial shade will be found to be beneficial to it; but this, and some other points connected with its culture, will doubtless be enlarged upon as the plant becomes better known and appreciated.

W.

INDOOR FRUIT GROWING FOR MARKET.

FORCED STRAWBERRIES.—Strawberry forcing is carried on in the neighbourhood of London to a large extent, and with very profitable results. People within a short distance of the market can gather the fruit when it is required by the salesman, and it can thus be supplied fresh, whereas growers at a distance, who have to pack their fruit and send it by rail on the chance of its being sold, are not in so good a position as far as profits are concerned. Mr. Wilmot, of Isleworth, grows a large quantity of early Strawberries. Sometimes they are placed in the Vineries until active growth has commenced; but, as a rule, they are confined to pits and other places specially provided for them, thereby avoiding the chances of their introducing red spider into the Vineries, which they are very apt to do. Upwards of 20,000 Strawberry plants in pots are forced here every year, and large quantities are planted out in heated pits and frames. For the former purpose the strongest and earliest runners produced by outdoor plants after their fruit has been picked are layered, when they soon take root. They are then carefully lifted with as much earth adhering to their roots as possible, and carried on hand-barrows down to the potting-shed, to be potted into 6-in. pots. The soil used for potting consists of a stiff, loamy character, with a liberal addition of good rotten manure. The plants are potted firmly in the soil, and when that is done they are placed closely together in pits, where they are kept well watered, and have but little air given them until they have commenced to make fresh roots, when the lights are removed and the plants exposed to as much sun and air as possible. Plants treated in this manner are not so good as those layered in small pots in the first instance and potted into larger pots afterwards, but it is probable they pay best, because the labour incurred in keeping from 20,000 to 25,000 small pots well supplied with water during the hottest part of the summer is by no means slight, to say nothing of the labour of filling them with soil and pegging the runners down on them. Portions of the pits in which the plants are placed are supplied with 3-in. hot-water pipes running all round them, and into these compartments the best and earliest plants are put in order that they may be brought gradually on when forcing time arrives. When wet weather sets in in autumn the lights are put on and tilted up at the back, and water is withheld from the plants in order to induce them to ripen their crowns thoroughly, a condition in which lies the principal secret of success. Soon after the commencement of the new year the first batch of plants is plunged in a gentle hotbed, consisting of manure, tan, or leaves, and made up to within 6 in. or 8 in. of the glass. An atmospheric night temperature of from 40° to 45° with a rise of 10° by day is maintained until the plants show flower, when the temperature is gradually increased until the blooms are expanded, at which stage the plants are removed to the Strawberry house to set and ripen their fruit. Water is cautiously applied to the roots until the young fruits are formed, and abundance of air is admitted on every favourable opportunity. When well set the smallest and unshapely fruits are picked off, water is more freely administered, and liquid manure is occasionally applied to assist the swelling of the fruit. When the fruit begins to change colour, a cool, airy temperature is maintained and water is again more sparingly given to the plants, in order to enable them to ripen the berries perfectly and improve their flavour. By the time the first plants have ripened their crop a successional batch, which has been brought on in the same way as the first, is ready to be put into the house, and thus the plants are brought on until the stock is exhausted. Mr. Wilmot's Strawberry house is one of the best of the kind to be met with in market gardens. It is 10 ft. high, and

about the same in width at the bottom, and one side of the roof comes nearly down to the ground, the other, which is short, resting against the back wall. The staging inside consists of shelves arranged like the steps of a stair, and is placed quite close to the glass. Here the plants set and ripen their fruit remarkably well, owing to their being subjected to abundance of light, air, and sunshine. Strawberries that are planted out in frames consist of young plants dug up from between the rows of outdoor plantations, when they are forked over and manured in March. As much earth as possible is brought in with the roots, and they are immediately planted about 12 in. apart each way in unheated pits, in which have been put a few feet of warm manure, covered with 1 ft. or 18 in. of good rich soil. After planting, a good watering is given, and the lights are kept rather close until the plants are in flower. The gentle heat of the bed in which these plants are placed quickly promotes root action, and trusses of flowers are soon visible, when they are afterwards treated exactly the same as pot plants. Another batch of plants from the same source is also planted in cold frames without bottom-heat, in order to keep up a succession. These two plantations yield a good supply of fruit after that from the pot plants is exhausted, and before the earliest fruit can be gathered out-of-doors. When in bloom women are employed to pick off the runners and tie a piece of bast, which is supported by a few small sticks, round each plant, in order to afford a better opportunity of watering and keeping the fruit clean.

One grower near London who forces some 9000 plants annually always keeps a plantation out-of-doors on purpose to supply runners, but instead of waiting until these have attained a good size, and layering them in pots (as is generally done), as soon as runners can be had with a pair of good leaves, they are severed from the plants, and dibbled ten or twelve together in 6-in. pots filled with sharp sandy soil; they are then placed in a warm temperature, such as that of a Cucumber or Melon house, where a little shade and moisture can be afforded them. When well rooted, they are shaken out of the pots and potted singly in 3-in. pots, and again placed in a warm house until they have become established, when they are hardened off and placed out-of-doors. Early in August they are potted into their fruiting-pots in good, rich, stiff loam, and placed in an open, sunny situation on a bed of ashes, where they receive plenty of water, and all runners are kept regularly cleared from the plants, which are encouraged to ripen their crowns well before wet weather sets in, a point on which ultimate success greatly depends. Plants which have been forced are also used for that purpose a second time. As soon as the fruit has been gathered from them, they are hardened off, and placed closely together out-of-doors in a shady situation, and are given plenty of water, and otherwise well attended to. In July they are shaken out of their pots and planted in well-prepared ground for a few weeks, where they get well hardened, and make a quantity of new roots close to the stems; they are then taken up, all the old roots cut off, and the stems cleared of dead leaves, &c.; the plants are then placed in their fruiting pots. Thus treated, they produce fruit quite as plentiful and good as that from runners. Strawberries here are placed in cold pits, &c., when bad weather sets in, and batches of about 1000 at a time are taken to Cucumber and Melon houses until they are in bloom, when they are removed to a more airy place to set their fruit; and when fully set they are placed in the large, flat-roofed house, already alluded to, to ripen, which by this time will have been cleared of bedding plants. Sir Charles Napier is the only kind of Strawberry grown here; its fine appearance makes it a good market fruit, and being firm-fleshed, it sustains little injury from travelling.

Another grower, who informed me that he usually gathered about 280 lb. of ripe fruit from 3000 plants in pots, obtains runners from outdoor plants which are layered in small pots filled with garden mould in July. In August they are potted in 6-in. pots in stiff loam, little or no manure being used; by this means rank growth is kept in check, and the crowns ripen thoroughly and never fail to bear good crops of large fruit. The plants are brought into bloom in the Cucumber-houses, and when they have set their fruit, they are taken into the Vineries or similar places to ripen. They are then placed on shelves, not near the glass, as is usually the case, but simply placed on boards laid on the floors of the houses; and, although shaded to a great extent, the fruit, both in colour and flavour, is all that can be desired. Sir Charles Napier is here also the only kind grown, with the exception of a few hundreds of Keen's Seedling to produce a few early fruit. The bulk of the crop is ripened and gathered by the middle of May, as after that time there is no convenience for Strawberries under glass; and, moreover, if kept in houses with other subjects, they are apt to infest them with red spider.

A larger grower at Hammersmith cultivates Strawberries in pots to the extent of 30,000 plants yearly. They are raised from runners layered in 3-in. pots as early as they can be obtained from plants in the open ground, and, when well rooted, are shifted into 6-in. pots. They are then placed in a sunny position, and when wet weather sets in the pots are laid on their sides, a position in which they remain until frost sets in, when they are stacked one on the other in mounds and covered over with ashes or dry litter. Early in February all dead leaves are picked off the plants, and they are placed on the floor of a large lean-to house 12 ft. from the glass. Here they remain until the fruit is gathered, shelves and similar contrivances being entirely dispensed with. Strawberries are not forced here very early in the season, but the fruit is ripened in quantity a month or so before it can be obtained out-of-doors. Strawberries in May fetch from 4s. to 6s. per lb., according to quality, and pay much better than those obtained a month or more earlier, although the latter realise double the price. The house in which Strawberries are grown here was at one time intended for a Vinery; but as it was found that Strawberries succeeded in it so admirably with very little trouble, the idea of planting Vines was abandoned, and it was kept entirely for Callas, Spiræas, Deutzias, &c., during the winter, and Strawberries in spring and early summer. The back wall is planted with Peaches and Nectarines, which yield large crops.

Strawberries in pots have been very successfully grown by Mr. Bennett, of Rabley. One year he fruited a large batch of plants that had been forced the previous year, shaken out and re-potted, and placed on the shelves in the houses. The quantity of fruit obtained from these plants in November and December was something wonderful, and when I paid Mr. Bennett a visit in March he informed me that he was then picking good Strawberries from the same plants, as well as from some that had been grown from runners in the ordinary way the previous summer. Garibaldi is Mr. Bennett's favourite variety for forcing, and in his hands it is certainly superior in every respect to any other kind I have seen used for that purpose. The fruits produced even in the darkest days of winter are of a bright scarlet colour, and on several occasions large fruit of it has been exhibited at the Royal Horticultural Society's meetings at South Kensington, and obtained each time first-class certificates. In the middle of March I have seen shelves of this Strawberry presenting an appearance equal to that often seen in May; the fruit was large and well-coloured, and, contrasted with Keen's Seedling, it had a decided advantage both in appearance and flavour. The pots

were placed about the house wherever it is convenient, on shelves close to the glass, no pans or saucers being employed for placing the pots in, but abundance of water was given whenever the plants required it. Thinning the fruit was never thought of, each plant being required to produce as much as possible, and some of them yielded as many as fifty good Strawberries. The fruit is picked three times a week, packed in punnets, and taken to market. For those produced before Christmas Mr. Bennett obtained from 12s. to 15s. per lb., and during February and March Strawberries of good quality fetch double that price. Strawberries when grown in pots or frames to a large extent are gathered by women every other morning, who place them in small punnets used for that purpose. When all are picked, the punnets are covered with leaves, packed in hampers or boxes, and sent to market. Sometimes the pickers are paid by the day, and at others they receive so much per dozen punnets, according to the crop. When forced plants have ceased bearing, the best are picked out, placed in a sheltered position and kept well supplied with water until a convenient time has arrived for them to be planted out-of-doors in rows between fruit trees or in open quarters on land previously heavily manured and deeply dug, a position in which they seldom fail to yield heavy crops the next season, but, as they seldom bear sufficient to be remunerative the second year, they are dug up and the ground is planted with other crops.

OUTDOOR STRAWBERRIES.—Strawberries are extensively cultivated around London, especially in the neighbourhoods of Isleworth, Acton, Deptford, Chiswick, and Twickenham. In the Fulham Fields the soil is considered to be too light to grow Strawberries well, and therefore scarcely any are grown there, it being considered more profitable to grow other crops that succeed better. Strawberries are often grown under fruit trees, but there are also many open fields devoted to their culture. Those who grow Strawberries for forcing often plant out some of their plants after the fruit has been gathered, but the majority of the Strawberries in market gardens are obtained from runners taken off the outdoor plants after the fruit has been gathered; the best of the runners are then selected and severed from the parent plant with a spade, so as to make them entirely dependent on themselves for support, and thus they are allowed to remain until required for planting, which usually takes place about September or October. The ground to be planted is heavily manured and deeply trenched, or, if it was exceptionally well manured for the previous crop, only a little is used, and sometimes it is only dug one spade deep. The ground, being levelled, is marked off into lines 18 in. apart, lengthwise and crosswise, and the plants, which are dug up with as good balls of earth as possible adhering to their roots, are placed exactly at the intersections of the lines, thus leaving them 18 in. apart each way. In some cases, however, more space than this is allowed. After the first year's crop is gathered, Mr. Dancer, of Chiswick, lifts every fourth row in order to make a pathway to enable the women to gather the fruit off those remaining. These paths are cropped with Lettuces or Coleworts, and thus little or no loss is sustained. Although, as I have stated, Strawberries are largely grown under the partial shade of fruit trees and between rows of fruit bushes, the most favourable situation for them is acknowledged to be an open one. When under fruit trees the distance apart of the plants varies, and depends on circumstances, but 20 in. or 24 in. is the average; one, or at most two rows only, are grown between the bushes. For the first year after planting Lettuces, Turnips, or other dwarf crops are grown between the rows, and even in the winter of after years that space is not unoccupied. No care is exercised in their culture beyond hoeing and mulching, the latter being performed in May or June, or early in spring, and

consists of the common stable manure, which, after it is washed by a shower, is quite clean. A common way of mulching is to scatter the manure all over the field, covering the plants as well as the ground. This being done early in spring, the foliage rises up through the litter fresh and strong. Gathering is done chiefly by women, and in dry weather. The fruits are carefully packed into punnets, which are packed in large baskets for the convenience of waggon transit. After the fruit has been gathered the runners are cut away on either side of the rows, and all refuse taken immediately to the centre of the alleys, which are then dug and cropped. A plantation lasts good for three years, bearing sometimes more or less, according to the land and the dry or wet summers.

Most of the Strawberries grown near London are disposed of for dessert, the chief supply for preserving coming from Kent. At Swanley there are hundreds of acres devoted to Strawberries, the climate and soil being admirably adapted to their growth; I say the soil, because the plants appear to succeed in it so well, but in reality the climate must have the most beneficial effect, or else cultivators, as a rule, are decidedly wrong in their statements with regard to the most suitable soil for Strawberries. It has often been said that a stiff clayey loam of a rich character is indispensable to the perfect culture of the Strawberry; the soil at Swanley is, however, exactly the reverse of this. In some places it may be termed rather solid and stiff, but in the majority of cases it is of a light sandy and remarkably stony character; and in this the plants appear to succeed quite as well, and bear crops equal to those planted in soil of a heavier nature. Indeed, the soil which produces the best crops here is one in which no gardener would think of planting his Strawberries, and yet the yield is enormous. In well-established plantations may be seen as many as 100 good fruits on a single plant. The chief kinds grown are Keen's Seedling, Sir Joseph Paxton, Sir Charles Napier, Late Pine, James Veitch, and Early Crimson Pine. British Queen may be found here and there, but not in very large quantities. The plants are put out in well-manured soil in autumn in rows about 2½ ft. apart and 1½ ft. from plant to plant. Other crops are seldom planted between the rows, the aim being to give the Strawberries the full benefit of the soil. The plough is run between the rows in autumn, which keeps the plants on ridges, thereby keeping the roots well drained. In spring the horse-hoe is used and the ground levelled, after which, in many cases, a slight coat of litter or straw is laid between the plants, in order to prevent the fruit being splashed by the rains. The majority of Strawberries are grown in open fields by themselves, but large quantities are to be found between young Gooseberry or Currant bushes, a position in which they succeed well until the trees get so large as to injure them by their shade. For preserving, Strawberries are not in such great demand as other small fruits; therefore they are often picked with stalks attached to them. They are picked in small baskets, which, when full, are emptied into sieves holding about 24 lb. For each of these the pickers get 5d. in ordinary seasons, and at this rate they make good wages. Even in a year when the crop was not so heavy as usual, one grower informed me that he had sent away nearly 6 tons in one day. Altogether, one year an extensive grower sent away 125 tons of Strawberries to the London markets; and in one day the next year one grower sent away 2500 pecks, the weight of which is nearly 16 tons. All runners are kept regularly cut off the plants, and the ground is kept free from weeds. The best fruit finds its way to the London and other markets, but what are termed squashers, which means the bruised or over-ripe ones, are picked without stalks, put into tubs, and disposed of at some of the jam factories.

Amongst all the Strawberries that come to Covent Garden Myatt's British Queen still retains the foremost position as regards flavour, price, and the quantity sold for dessert purposes. This fact is well known to Strawberry growers, who cultivate it extensively wherever the soil is suitable, but in Kent few of this variety can be seen, the reason assigned being that the Kentish growers sell most of their fruit to the jam manufacturers, and they say their soil is too light for it. The variety called Sir Joseph Paxton created quite a sensation in Covent Garden when it was first introduced, for when unpacked the fruit came out fresh and uninjured, whilst other kinds were much bruised. Fruit of Sir Joseph Paxton resists wet remarkably well; it is fine in form, of a good colour and flavour, and fetches more money in the market than any other kind, British Queen excepted, and it is the chief variety grown in Kent. Goliath, a kind which will endure drought well, is also grown; likewise Comte de Paris and Princess Alice, both early and prolific sorts.

The cost of rooted Strawberry runners is about 5s. per 1000, and if planted in rows 2½ ft. apart each way 7000 plants per acre are required, but if planted in rows 2½ ft. apart and 1½ ft. from plant to plant about 10,500 would be wanted. The best fruit, which is picked in punnets early in the morning and placed in boxes, each of which holds some five dozen punnets, and sent to market early in the day, realises, on an average, 1s. 6d. per lb. If a field of Strawberries be sold to a merchant it realises about £18 or £20 per acre, the purchaser bearing the expense of gathering, &c. Strawberries gathered in tubs and sent to the jam merchants fetch about £25 per ton.

PACKING STRAWBERRIES.—Most of the finest of English-grown Strawberries sold in Covent Garden are packed in shallow punnets, 9 in. or 10 in. in diameter, and in these all, or nearly all, the fruit is exposed to the eye of the purchaser. In the midst of the Strawberry season large quantities of fruit are brought to market in sieves and half-sieves, a sieve containing about seven imperial gallons, but in this case the fruit is principally intended for preserving, and, therefore, its appearance is a matter of less moment than when it is to be used for dessert. There can be no doubt that the broad, shallow English butter-basket, or the Bordeaux basket with a loop handle on the lid, are the best forms of basket to use for transporting Strawberries in quantity either by rail, steamer, or road, and after these the English punnet system is most to be recommended. In the latter case the Strawberries are picked and placed immediately into the punnets by women and children, who carry them when full into the packing-shed, there to be packed in large boxes. A few leaves are scattered in between the layers to keep the fruit moist and cool, and in this way most of the fruiterers and salesmen in Covent Garden are supplied with freshly-gathered Strawberries two or three times a day. An Enfield grower, who annually sends large quantities of the finest Strawberries to Covent Garden, uses what may be termed combination baskets, made in the form of half-sieves, and 10 in. in diameter, by 7 in. in depth. The lid consists of a flat, bottomless basket, over which a cloth is tied by the corners, and this, placed over the basket, forms a well-ventilated covering, and also prevents the fruit from being crushed by any weighty substance falling on the basket from above. Erect cylindrical jars have been recommended in which to pack Strawberries, but the shape is against them, inasmuch as the weight of the upper layers of fruit crushes those below them. Such jars are cool, and the fruit may keep fresh for a longer time placed in these and securely tied down with paper than in shallow baskets, but the weight of the jars themselves is as much or more than that of

the fruit, and this alone would prevent their ever being largely used for packing purposes.

Mr. Gloede, of Humbergh, writing on the subject, says:—"I found from experience that the best material in which to pack Strawberries are the leaves of the green garden Orach (*Atriplex hortensis*); I therefore always sow a certain quantity of Orach seed in March or April, so as to have young leaves available for packing purposes before the crop of Strawberries is fit for use. For packing I use shallow boxes of various sizes which do not hold more than two or three layers of fruit; I line the bottom with Orach leaves and thereon put the Strawberries packed closely together. The first layer being finished, I again use Orach leaves, and so on until the box is full, when I add a good layer of leaves on the top, so that when the cover is put on the boxes will, if necessary, endure hard usage for a couple of days without their contents being in the slightest degree injured. I have frequently sent Strawberries packed in this way both by post and rail over 200 miles, and they have invariably arrived in excellent condition. The sorts which I prefer for such purposes are La Constante, Sir Joseph Paxton, Waltham Seedling, Duke of Edinburgh, The Countess, Early Crimson Pine, Cockcomb, Fairy Queen, Lucas, Dr. Hogg, Unser Fritz, Ascot Pine-apple, and Duc de Magenta, all of which may be picked when quite ripe; whilst President, Frogmore Late Pine, and James Veitch should be gathered a day beforehand. It is useless to attempt sending such soft kinds as Black Prince, Marguerite, Keen's Seedling, Jucunda, &c., however handsome they may be, any distance, as they would be sure to be more or less damaged.

C. W. S.

GARDENING FOR THE WEEK.

Flower Garden.

The charm of a garden is the constantly-recurring freshness which the various plants present at all seasons, but more especially this spring, after the long, dreary winter through which we have just passed. Though many spring-flowering plants have succumbed, those that have survived are thereby rendered the more enjoyable. Amongst them may be named common Violets, red and white Daisies, Crocuses, Primroses, *Anemone apennina*, *Arabis albidia*, and *Scilla sibirica*. These will very shortly be supplemented by *Omphalodes verna*, Irises, Candytufts, Hepaticas, Gentians, and others. All of these should be plentiful in every garden. Expense as regards these plants need be no barrier, as they can all be had for a few pence each, and can be transplanted at almost any season. The denser Sedums and Saxifrages are appropriate plants for association with the foregoing, either as undergrowth or as intermediate patches. The following are now very beautiful, viz., *Sedum aureum*, *S. acre elegans*, *S. glaucum*, and *S. lydium*, *Saxifraga rosularis*, *S. hirta*, and *Thymus hirsutus*. The smallest plant of any of these split up and propagated during the summer would make several good patches for next spring time. Lily of the Valley is now starting into vigorous growth, and its flowers will be much improved if the inert surface soil be removed and replaced with fresh loam and well-rotted manure in equal proportions. Beds of *Dicentra spectabilis* and *Spirea japonica* should be treated in the same way, but it will be necessary to protect these in the event of sharp frost occurring. Mats laid on hooped sticks form the simplest protection for them and other spring flowers of doubtful hardiness. Where spring gardening is not practised, and the beds at liberty, a good deal may now be done to advance the summer bedding and prevent a pressure of work at that inevitably busy season. The arrangements can be completed, the designs marked out, and the hardy and half-hardy plants may be at once planted. Edgings, divisional lines, and groundworks of *Violas*, *Echeverias*, *Sempervivums*, *Saxifrages*, *Sedums*, *Menthas*, &c., can all now be planted with safety, and very shortly *Calceolarias* and *Verbenas* may follow. Tastes differ both as to arrangement of colours and designs; I shall therefore say nothing on either of these points, except that there should never be a preponderance of glaring colours, of which the eye soon tires, and the designs should be of the simplest kind; intricate designs are never effective. Autumn-sown annuals that have survived the frost may now be thinned out; the plants are sturdier, and flower better than if left too thick. Sow in the open ground Sweet Peas, Mignonette, Candytufts, *Eschscholtzias*,

Larkspurs, and Clarkias, and prick out those sown in frames as soon as they are fit to handle. Bedding plants have driven annuals for summer embellishment out of our flower gardens, and though this is to be regretted it cannot be wondered at, seeing that bedding plants are so much more lasting and amenable to manipulation. Still, there is room for both in most gardens—the bedding plants for the parterre, and the annuals for the mixed borders, supplementary to the herbaceous plants, a purpose for which they are every way adapted. Shrub planting, pruning, hedge clipping, and all other extraneous work should now be completed, as each week will bring its own work that must be done, such as mowing and rolling lawns, sweeping, weeding, and rolling walks, and planting out bedding plants. W. W.

Auriculas.—Exhibitors now of these will have an anxious time of it, as all the trusses of flowers are showing themselves, and the question arises as to whether certain flowers will be in perfection at the time required. No definite instructions on this point can be laid down for those who have not had experience in such matters; suffice it to say, however, that, as a rule, selfs are in good condition early, and that they do not stand so well as the best green, grey, or white-edged flowers. There are exceptions, however, as one of the latest Auriculas to flower is Duke of Argyle, a fine crimson self, and some of the edged flowers lose their character in a few days after the zenith of their beauty has been reached. If it be intended to push forward any late trusses, the plants may be placed in a warm house, near the glass, and air must be admitted rather freely by day, with a little at night. The Auricula shows are fast approaching, and as many growers at long distances off may want to exhibit, but are deterred from doing so owing to the expense, I may mention that if such persons would turn the plants out of their pots, and wrap the balls round with old shading tightly, they might be packed into very small boxes. I have, indeed, seen an exhibitor carrying a box in each hand, in each of which there were thirty plants—as many as most amateurs would be able to exhibit. The societies provide pots and Moss for surcising them.

Carnations and Picotees.—These seem more stubborn to start into growth this year than usual; when they do fairly start, they will probably make up for lost time. Look over the plants and remove decayed leaves, also weeds which will be sure to grow in the fresh compost. Keep all tender sorts under the protection of cold frames as long as it is convenient to do so. If cuttings of Perpetual-flowering Carnations have not yet been put in, no time ought to be lost in seeing that this is done. Those who are desirous of having a large stock of plants should put in the small side growths as soon as they are large enough for that purpose. If these be placed under a close glass light in the propagating house, not 5 per cent. will fail to strike root. Cuttings put in early and now well rooted should be potted off singly in small pots, setting the pots in a warm, rather close place, to induce the formation of fresh roots; afterwards place them in a cold frame.

Hollyhocks.—These should be grown much more extensively than they now are. Seeds from the best sorts may now be sown in the open air if the be no glass lights or frames available, but they will germinate more freely in a gentle hotbed, although they must not be coddled under glass after they are aboveground. Plants raised in this way will flower well next year. See that no time is lost in getting all named sorts planted out, using the precautions previously recommended.

Pansies.—These are even more deserving of attention than the Hollyhock, as they are attacked by no disease that cannot be easily combated. Plants in pots are now making a charming display, and if the leaves have been kept free from mildew and greenfly, a continuation of fine flowers may be expected. When the flowers begin to fall off in quantity, as they will do in time, pick all of them off, surface dress with rich soil, and on this peg the shoots down; this will produce renewed vigour, and perfect flowers will be the result.

Hardy Primulas in Pots.—Sparrows are very destructive to these when planted outdoors. We have hundreds of Primroses and Polyanthus planted out, and it is disheartening to see the flowerbuds picked off and dropped on the ground in thousands before they open. Grown in cold frames, the finer forms of Primrose rival even the Auricula and laced Polyanthus. They require but little attention, but that must not be denied them; they must have free ventilation, plenty of water, and the leaves kept free from red spider and greenfly. Plants of *P. nivalis* are now masses of bloom, which is admired by every one. We place the plants under a north wall when they go out of flower, and there they make free, healthy growth.

Tulips.—These everywhere have made slow, but healthy growth. I wish we could cover the beds with glass lights, to prevent rain and frost from injuring the leaves, and also to save the rising flowers from injury. We would rather, as yet, use them for the Carnations. In

order to grow the finer kinds of Tulips well they ought to have a glass protection. The canvas shades should now be used on cold nights.—J. DOUGLAS.

Parks and Open Spaces.

Plants for Out-of-the-way Corners.—In public parks, especially where they are extensive, will always be found, comparatively speaking, neglected corners in out-of-the-way places, where, from some cause or other, it is both impracticable and unadvisable to carry out the usual routine work of the more conspicuous portions. This is particularly the case under large trees (where few plants will thrive), on banks, &c. These positions may be considerably improved by the addition of plants which require but little attention. One of the most useful for this purpose is the Giant Cow Parsnip (*Heracleum giganteum*), a plant which produces noble umbrageous foliage and bears immense umbels of greenish-white flowers on stout stems, from 8 ft. to 10 ft. in height. It soon establishes itself, and care should be taken that it does not seed too freely, as it would cause much trouble. Altogether it is a most desirable plant, and wonderfully effective. Thistles (*Carduus*) are very handsome subjects for the same purpose, some of the varieties reproducing themselves freely. Galega officinalis should be found in every wild or neglected garden, as a few plants of it placed at intervals of 6 ft. or 9 ft. apart will soon establish themselves over a large area, as they seed profusely. The foliage is extremely elegant, the Pea-shaped flowers (pale blue and white) exceedingly pretty, and they continue in perfection for a considerable time. The annual Sunflowers are most desirable. A few seeds of them sown in the most open places between trees and shrubs produce an effective show during the summer and autumn months. Evening Primroses (*Oenothera*) and Marigolds produce a profusion of bright, yellow flowers, and require no further attention than an occasional weeding. *Phytolacca decandra* is a hardy perennial, growing some 4 ft. in height, and bearing very handsome and peculiar spikes of dark crimson fruit. Centaureas, belonging to the hardy section, are particularly attractive, some having golden-yellow ball-like flowers, others blue, purple, &c., and all of them are of easy cultivation. Verbascums are also well adapted for shrubberies, and produce a profusion of singular Orchid-shaped flowers of various rich shades. Among plants that are more suitable for the front rank in shrubbery borders may be mentioned the following: *Nasturtiums*, *Antirrhums*, *Canterbury Bells*, *Columbines*, *Foxgloves*, *Geums*, *Pyrethrums*, *Rockets*, *Sweet Williams*, *Valerian*, *Polemoniums*, *Gladiolus*, *Lupins*, *Wallflowers*, *Polyanthuses*, *Pansies*, *Saponarias*, *Mignonette*, &c. These are all extremely varied and beautiful, and require but little attention, reproducing themselves freely, and yielding a round of flower extending over several months. Beets, Fennels, and Acanthus are most useful in the way of furnishing foliage, as are also *Artemisias*. With such plants as these, many a nook which is now neglected might be made attractive. The whole of the above require only the simplest treatment, and will well repay those who will give them a trial.

Annuals, &c., as Substitutes for Bedding Plants.—Although annuals do not, as a rule, last long in flower, there are some which may worthily rank with bedding plants, and amongst these may be mentioned the following: *Asters*, *Balsams*, *Heli-chrysums*, *Nasturtiums*, *Ten-week Stocks*, *Phlox Drummondii*, *Portulacas*, *Taragetes*, *Sanvitalia*, and *Zinnias*, as flowering plants, and *Beets*, *Amarantus*, *Perilla*, *Artemisia*, *Tobacco*, *Ice plants*, *Solanums*, *Ricinus*, and *Salvia argentea* as fine foliage plants. There are also a few perennials, biennials, and annuals which may be raised from seed, but which are usually struck from cuttings in order to preserve some special character, viz., *Ageratums*, *Verbenas*, *Lobelias*, *Petunias*, *Cannas*, *Chamepascas*, and *Pyrethrums*; all these are beautiful as regards either foliage or flowers, and, if carefully used, may be induced to produce a display almost equal to that yielded by our most favoured bedding plants. With the exception of *Sanvitalia* and *Beets*, the whole may be raised in pots on a slight bottom heat, and as soon as they are fairly out of the ground they should be placed in a greenhouse for a few days to harden off. A cold frame having been prepared with rich soil, the flowering section, with the exception of *Ageratums*, *Balsams*, *Lobelias*, *Petunias*, *Phloxes*, *Portulacas*, and *Verbenas*, which should be pricked off in pots and kept in moderate heat close to the glass, should be pricked off about 3 in. or 4 in. apart. The whole of the fine-foliaged section should be put into pots, pans, or boxes, and retained in heat. A knowledge of the heights and colours only is then required to make a grand display. A moist, warm day should, if possible, be chosen to put them in the open ground, and if taken up with balls of earth they will be sure to succeed. *Sanvitalia* and *Beets* may be sown where they are required to stand and thinned out where necessary. *Pyrethrums*, *Petunias*, *Lobelias*, *Ageratums*, *Cannas*, and *Chamepascas* should, to have them in good condition, be sown as early as possible.

Trees and Shrubs transplanted during the winter should be carefully watched in regard to watering. Many failures are attributable to neglect in this respect. I would recommend, except in wet, heavy soils, that as soon as the buds show signs of expansion water be given on the least appearance of shrivelling of either bark or buds, and in dry weather watering should be continued until the foliage is fully developed. In many cases a weak mixture of manure water may be given with advantage.

Grass Seeds sown during March will soon be fairly above ground, and should be well rolled as often as the weather will permit. As soon as the Grass is sufficiently grown the mowing machine or scythe should be used; this cannot be done too soon or too often, as some Grasses, and also weeds, will be found to grow rapidly, and will, if allowed to remain, destroy some of the most desirable kinds of Grass.—CHARLES DENNIS.

Conservatory.

Where conservatories of large size are kept fully furnished with flowering plants all through the season, it not only requires several other houses or pits to bring the plants into flower in succession, but also others into which they can be moved after blooming. When conservatories are kept, as they generally are, at a much higher temperature than ordinary greenhouses, and the structures into which the plants have to be moved after blooming are insufficient for the purpose, the plants often receive a check which much interferes with the season's growth. All such subjects as Genistas, Acacias, Daphnes, and even *Deutzia gracilis*, that have been pushed on in heat, should, immediately after blooming, be placed where growth, already begun to be made, can go on unchecked. Any plants of these descriptions that require more root-room should at once be potted, for, in their case, the flowering capabilities for next winter will, in a great measure, be proportionate to the growth which they make through the summer, and any that will bear cutting back should be operated on freely, for with plants such as those just named, it is usually much better to have a good number of a compact, useful size than to allow them to get too large, as, in that case, they often have a bare-stemmed and unsightly appearance. Azaleas and Camellias taken from the conservatory should at once be placed under conditions favourable to their growth; the Camellias should be kept close, and should have a night temperature of 50° or 55°, and higher in the daytime, according to the weather. There should be plenty of moisture in the atmosphere and at their roots, and they should be shaded from bright sunshine. Azaleas thus started into growth should be kept scrupulously clean from their worst enemy—thrips; but in their case, little, if any, shade is required or should be used, as it induces a soft, weak condition of the leaves, rendering them more liable to suffer from the attacks of insects and less capable of bearing any application for their destruction. Cyclamens done flowering should, at once be placed in a house or pit where the atmosphere can be kept a little close, with plenty of light, but slightly shaded from the sun; these are also liable through the spring months to get infested with green fly and red spider, which, confining themselves almost exclusively to the undersides of the leaves, frequently go unobserved until the foliage is very much injured, the result of which is that it dwindles away through the summer, and the roots get into a stunted, hard state, which prevents their afterwards growing and flowering satisfactorily. Where means exist, and the hints that have been given are followed for keeping back a few of the latest-flowering kinds of Camellias, these will be found very useful in the conservatory during this month along with Epacris, Boronias, Eriostemons, Azaleas, Rhododendrons, the last batch of Hyacinths, Tulips, Lily of the Valley, forced Roses, Cinerarias, &c. As the sun's power increases, there will be still more need for attending to shading, or the flowers of most plants will be of comparatively short duration.

Climbers that were cut back during the winter, and that have now commenced growth, must have regular attention in the way of training. Those possessing a twining habit require constant care in this matter, otherwise the shoots get interlaced to such an extent that it is impossible afterwards to get them disentangled, and the young growth of all such plants as these is generally so tender as to scarcely admit of being untwined from anything that it lays hold of without stopping further extension. Plants of this description, either grown in pots, tubs, or planted out in borders, where the root space is limited, will, in most cases, require the assistance of manure water. It is, however, of little use applying this unless growth is actually in progress; for, if given at other times, the fertilising elements which it contains get washed away by the usual waterings, and do no good. In structures of this description the use of ordinary manure water is not admissible, from its offensive odour, but if made from guano, with a little soil, and applied early in the morning, that objection will be obviated, and in places where nothing of the kind can be employed, Standen's manure dusted on the surface of the pots, tubs, or beds, where it gets washed into the soil with the ordinary waterings, will be found most effectual.

Greenhouse.

Hard-wooded Plants.—Whatever potting remains to be done should be finished forthwith; not only is this necessary to make way for other work, but it will be much more conducive to the well-being of the plants. The roots of such as were potted earlier will now be beginning to take to the new soil; they may be gradually inured to a fuller admission of air, but during this month it must be given at the sides of the house and with caution, for, although on some days the weather is favourable, on others it is not, and it should always be remembered that plants grown under glass are, for the most part, indigenous to countries considerably warmer than our own, and that consequently during our cold spring weather they are not able to bear exposure to anything in the shape of a direct draught. Young plants that have been potted should now be well tied out, with a view to laying the groundwork of future specimens, determining the shape by their natural habit, or that which they would assume if undisturbed, and stopping and bending lower down the strongest shoots, so as to equalise the growth. The whole stock, large and small, should now be gone over every morning in order to ascertain what requires water, as any inattention in this matter is much more injurious in its effects in the case of hard-wooded than in that of soft-growing plants.

Tuberous-rooted Begonias.—A stock of these should be grown in all places, large or small, on account of their being so useful in many ways. Roots of them started some time ago will now have made some progress, and should be furnished with root-room proportionate to the size of the bulbs. They will thrive under ordinary greenhouse temperature, but will come on faster if kept a little warmer. Any remaining bulbs that may yet be in a dry state should immediately be started; they will come into flower later in the season.

Calceolarias.—The herbaceous varieties will now be growing apace, and should be well attended to with manure water; they are gross feeders, and the advancing flower-spikes will be much benefited by it. They should be kept in a temperature of 45° at night. There are no plants that require more care as to keeping them free from aphides, for if these be once allowed to get ahead, it takes a severer application of Tobacco to kill them than the blooms will bear. The shrubby kinds are equally deserving of cultivation as the softer sorts, although their flowers may not be so conspicuous. There are few more useful subjects for general decoration than the old *C. anæa floribunda*. It is serviceable in the shape of small plants, such as are grown for the London market; but so managed it is insignificant compared with the character which it assumes when grown on for years and regularly cut back each season after flowering, something like a *Pelargonium*, part of the soil being removed, and the plant re-potted similarly. In this way I have kept these shrubby Calceolarias on for a number of years until they were from 2 ft. to 2½ ft. through, forming dense masses of golden-yellow, which continued in perfection in the conservatory for weeks after the spring-flowering plants were mostly over, a time at which they are very acceptable. Any of the stout-habited, dark-flowered kinds are suitable for growing in the same way. The treatment which they want at this time of the year is such as that which answers for the herbaceous sorts.

Cinerarias and Primulas.—Those who intend to save seeds of these should select the best marked forms as seed bearers. In the case of the Primulas they should be set on a dry, airy shelf, where they will get plenty of light, choosing plants that have not been weakened through early flowering, as they will not produce nearly so much seed as those that have only bloomed recently. With Cinerarias it is necessary to keep the colours separate. My practice is to put the best forms and colours of red, and also of blue, as well as the white grounds with red tips, each by themselves in small frames from the time they come into flower, selecting for the purpose the latest bloomers. Thus treated, these three colours will produce plenty of variety, including the many shades of purple and violet; but only by keeping them apart can a preponderance of the blues and purples of different shades be avoided. A little more Cineraria seed may again be sown towards the end of the month, and the plants from the first sowing must be treated so as to prevent their being drawn up weakly. A little Primula seed should also be sown to come into flower before Christmas. Double Primulas may now be propagated by means of cuttings kept a little warm, but not so much confined, or they are liable to damp. They are not nearly so effective for decorative purposes as the single varieties, but where flowers are much in request for cutting the double kinds are a great deal the best, as they last longer than the single ones.

Berry-bearing Solanums that are to be planted out during the summer, a system of treatment which, when the plants are managed in accordance with their requirements, I have found to be better and entail less labour than keeping them in pots; but to suc-

ceed in having the berries coloured early enough in the autumn they must be put out at once; they will stand much more hard weather than is generally supposed. I have never seen any frost after this time that will injure them in a fairly sheltered position, such as that ordinarily selected for their summer quarters. The advantages of planting out over growing in pots are, a denser habit of growth, more profuse and better coloured foliage, with much less trouble in keeping the plants free from red spider, and supplied with water.

Orchids.

The house in which the cooler section of Orchids are grown will now be getting gay with the flowers of *Odontoglossums*, *Masdevallias*, and other spring-blooming, cool house species. White or nearly white flowers like those which most of these *Odontoglossums* bear are very much more liable to show the effects of condensed moisture by becoming spotted than flowers of other colours; therefore, to keep the bloom fresh as long as possible, no more atmospheric moisture should be maintained than is necessary for the well-being of the many subjects that will now be making growth. Plants that have been affected the preceding season by that diminutive little pest the yellow thrips must be looked to, as increased solar heat will cause them to breed fast, and, if left unchecked, they not only make the foliage unsightly, but the injury which they cause to the young leaves in a partially developed condition has a serious effect upon the strength of the plants, for leaves that have been so damaged in their young state do not retain their vitality for the allotted time, and with these plants, as with all others, any premature loss of leaf has a weakening influence upon the whole plant proportionate to the extent of the injury inflicted. Whatever potting in this department remains to be done should be at once carried out, and the pots of those that do not require more root room ought to be surfaced with a little fresh material.—T. BAINES.

ANSWERS TO CORRESPONDENTS.

Cool Orchids.—Having greenhouse and forcing house attached, I would be obliged if you could give me the names of a couple of dozen of Orchids that I could grow without a great amount of heat.—H. (The following will answer your purpose, viz.:—*Dendrobium nobile*, *Cypripedium insigne*, *Lycaste Skinneri*, *Coleogyne cristata*, *Odontoglossum Alexandrie*, *O. grande*, *O. cirrhosum*, *O. nebulosum*, *O. Rossi*, *O. gloriosum*, *Lycaste aromatica*, *Dendrobium moniliforme*, *D. Chionodoxa*, *Sepholobium grandiflora*, *Oncidium macranthum*, *O. obryzatum*, *Maxillaria picta* and *aurantiaca*, *Cypripedium venustum*, *C. barbatum*, *C. caudatum*, *C. spectabile*, *Cisa grandiflora*. The two last named will grow in a frame from which frost is excluded, but require to be always moist—wet earth rather than dry—not only when growing, but also when at rest. The *Cisa* especially will require water in abundance when growing, which will be during the winter months, at which time it could be removed to a temperature of 50° to 55° with advantage. If, however, you are unacquainted with the management of Orchids, I would recommend you to obtain half-a-dozen plants only as a commencement, and for this purpose *Dendrobium nobile*, *D. japonicum*, *Lycaste Skinneri*, *Cypripedium insigne*, *C. barbatum*, and *Oncidium obryzatum* are the best and also the cheapest. They are all strong constitutioned, free-flowering kinds and all have nearly succeeded in a house, the atmosphere of which is kept moist and not allowed to fall below 45° during the winter months. *Odontoglossum cirrhosum*, although a comparatively new plant, is cheap and grows like a weed, but if *Odontoglossums* are attempted they must be carefully shaded, and the staging and flooring of the house must be damped down several times daily. If the house be a dry one the stage, which should be near the glass, may be covered with a layer of Sphagnum Moss, on which the pots containing the Orchids should be arranged. This will help to keep a moist, general atmosphere around them, and light and heat being more essential for most Orchids than any great amount of heat.—B.]

Names of Plants.—E. W. E.—Send us a piece of your so-called soap plant when in flower; we may then be able to answer your question. E. F. S.—*Byrrhophyllum ciliatum*. A. K.—*Cornus Mas* (the Cornelian Cherry). H. K.—*Dendrobium densiflorum* var. *latum*. Of this there are several varieties, the largest and best being named *Schrederi*. Miss T.—*Sisyrinchium grandiflorum*. W. L. N.—*Tropaeolum tricolorum*, certainly not *T. azureum*.

Camellia Sports.—I send you herewith two blooms from the same tree of the *Camellia Lavinia* which I cultivated, one of which has the usual cherry-rose tinge and stripe on a white ground, and the other is a deeper cherry-rose self-coloured sport, and shall be glad if any of your readers would inform me whether to their knowledge a similar sport has occurred elsewhere in the case of the above-named variety. There is the third sport which has appeared with me, and therefore it is fair to conclude that it is likely to be permanent, and may be worth propagating.—T. B.

Vines.—Sub.—If your Vines be as bad as you describe, your best plan will be to take them up and plant new ones.

Wellingtonia.—I have a well-grown plant about 30 ft. high, the frost has severely injured the points of the shoots being dead and withered, yet it has 9 in. to 12 in. How should the tree be treated? Shall I cut back all over?—W. B. [Yes; cut the dead tops off at once.]

Questions.

Vines in Greenhouses.—What am I to do with a Vine, a Black Hamburgh? It is ten years young, yet the stem is no thicker than a man's finger, and it has borne no fruit. The shoots are weak, and it looks starved, and yet it has good manure and manure water, and been closely pruned last year. The roots are in a bed outside a small greenhouse, and the two branches are trained inside and outside to the top of a span-roof. I must add that the greenhouse is small and full of flowering plants, and fire-heat is applied to it nearly all the winter. I should like a few bunches of Grapes for effect if not for enjoyment. What is to be done?—WETTERDEN.

Zinc Labels.—Are these injurious to Orchids? A writer on these plants, speaking of wire, recommends copper, because, he says, any other metal is probably injurious to the plants.—W. B.

Androsace helvetica.—I have a large cushion of this in a pot which I plunged two years ago in Cocoa-nut fibre refuse mixed with sand, and I find now that the roots have penetrated into the plunging material. Now, as I want to save seed from it, I should not like to do anything which would interfere with the formation of flowers, but I am afraid the roots, rambling in the Cocoa-nut fibre, will, in themselves, be a cause of preventing a free production of blooms, and I think this must have been the cause of its not having flowered last year, while the year before, when the roots were confined in a pot, there was a good show of bloom. What had I best do to attain my object?—E. H.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

APRIL 8.

The show of plants on this occasion was an exceedingly good one, many of the leading nurserymen contributing attractive groups, but the special feature of this exhibition was seedling *Amaryllides*, from Messrs. Veitch & Sons, Chelsea, consisting of about 150 plants of unusual excellence. Amongst them were introduced, with good effect, healthy dwarf Palms, Ferns, and similar plants. A group of Orchids, from Sir Trevor Lawrence, also attracted great attention.

First-class Certificates were awarded as follows:—

Dendrobium Brymerianum (Veitch & Sons).—A species with golden-yellow flowers and bearded lip; previously described in THE GARDEN.

Amaryllis Duke of Connaught (Veitch & Sons).—A scarlet-flowered kind, with broad, round petals of remarkable substance, and very smooth.

Chionodoxa Lucilliae (Barr and Sugden).—A charming, hardy, Scilla-like plant, having starry flowers, white and tipped with blue.

Coleogyne ocellata maxima (Williams).—A free-blooming kind, with white yellow-barred flowers set on long, graceful, arched spikes.

Masdevallia bella (Sir Trevor Lawrence).—A fine variety of the *Chimara* type, having large and singular blossoms, which, in the case of plants grown in baskets, come through their meshes, as *M. Chimara* often does.

Dendrobium crassinode album (Sir Trevor Lawrence).—A variety having finely-formed flowers, of snowy-whiteness, with a well-defined golden-yellow throat.

Cultural Commendations were awarded to Mr. Green, gardener to Sir G. M. Macleay, Reigate, for a cut spike of *Mackaya bella*, a fine old greenhouse climber rarely met with, and bearing Bougainvillea-like blossoms of a delicate lavender veined with crimson. To Mr. Boller for a singular *Echinocactus* named *E. myriostigma*; and to Mr. Woodbridge, for a fine specimen of *Cyrtopodium punctatum*.

Medals were awarded as follows:—Large gold Banksian to Messrs. Veitch & Sons for their group of seedling *Amaryllides*; small gold Banksian to Mr. Williams for a similar exhibition; a silver Banksian to Mr. Barr & Sugden for cut blooms of *Narcissi*; a silver-gilt Flora to Mr. Bull for a group of new and rare plants, Orchids, &c.; large gold Banksian to Sir Trevor Lawrence for a group of Orchids; silver-gilt Flora to Messrs. Paul & Sons, Cheshunt, for a collection of pot Roses; and a small silver Banksian was recommended to be given to Mr. Woodbridge for his plant of *Cyrtopodium punctatum*.

Miscellaneous Subjects.—Mr. William Bull showed an attractive group of new and rare plants, Orchids, &c. Among them were good plants of *Dracena Goldieana*, *Curculigo recurvata striata*, *Kentia Belmoreana*, *Encephalartos villosus*, *Epacris onosemiflora*, *fl. nivalis* (in good condition), a little Alpine *Azalea* named *A. balsameiflora*, *Croton Dornmannianum*, and *Hemanthus cinnabarinus*. With these were associated *Coleogyne ocellata*, *Dendrobium Falconeri*, *D. crassinode Barberianum*, *D. Wardianum*, *Lady's-slippers*, *Odontoglossum gloriosum*, *O. triumphans*, *O. odoratum*, *O. Pescatorei*, *O. crispum*, *O. cirrhosum*, and *O. Halli*; also *Masdevallia ignea* and *Harrayana violacea*, and *Cymbidium Lovianum* and *eburneum*. Among Orchids shown by Sir Trevor Lawrence were *Dendrobium Jamesianum*, bearing twenty flowers; *D. thyrsiflorum*, with a dozen pendent trusses; *D. Devonianum*, bearing a pseudo-bulb upwards of 3 ft. long, and beset with large fringed blossoms; the yellow *Oncidium concolor*, with from fifteen to twenty graceful spikes of unusually large blossoms; also fine examples of the brilliant *Masde-*

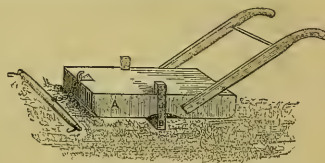
vallia Harryana, and a fine purple variety of it named *M. H. cœru*lescens; *Cœlogyne*, *corymbosa*, the curious *Callia Baucaria*, *Odontoglossum cirrhosum*, *O. triumphans*, *Lady's-slippers*, and *Phalenopsis*. Mr. B. S. Williams, Holloway, showed a group of plants, consisting of *Sobralia aurantiaca*, *Vanda tricolor superba*, *V. suavis*, *Odontoglossum triumphans*, *O. cirrhosum*, and *Pescatorei*; also *Lycaste Skinneri* and *Cymbidium eburneum*. With these were associated *Crotone Disraeli* and *Williamsi*, fine-leaved *Dracenas*, *Yucca filamentosa variegata*, the curious *Sarracenia psittacina* in flower, a fine panful of *Dionaea muscipula*, and well-flowered plants of *Anthurium Scherzerianum*. The same exhibitor also showed a rich and varied group of *Amaryllids*. A fine group of pot *Roses* came from Messrs. Paul & Sons, Old Nurseries, Cheshunt. Among them were *La France*, *François Michelin*, *Madame Lacharme*, *Catherine Mermet*, *Comtesse de Serenyi*, and *Royal Standard*, all in good condition; also cut blooms of *Maréchal Niel* and others. Messrs. Barr & Sugden exhibited cut blooms of *Daffodils*, among which were the following kinds, viz., the double *Florence Daffodil*, *Narcissus Humei*, *N. Pseudo-Narcissus Leedsi*, *N. obvallaris*, *N. o. maximus*, *N. incomparabilis albus Leedsi*, *N. cernuus*, *N. nanus*, *N. lobularis*, *N. Telemonius*, *N. bicolor* of *Florence*, and *N. lorifolius* of *Leeds*. The same exhibitors also showed a box of cut blooms of *Hellebores*. A group from Messrs. Charles Lee & Sons, Hammershsmith, contained well-flowered *Indian* and *Ghent Azaleas*, *Rhododendrons*, *Amaryllises*, & *Spiræas*, intermixed with *Palms* and other fine-leaved plants. Messrs. Osborn & Sons, Fulham, had a group of plants consisting of *Azaleas*, *Anthuriums*, *Hyacinths*, *Arum Lilies*, and fine-foliaged plants; and Mr. Aldous, South Kensington, showed a group of *Hydrangeas*, *Azaleas*, *Pelargoniums*, *Ferns*, and similar decorative plants. Mr. Parker, Tooting, contributed hardy plants, amongst which were the double-flowered variety of *Primula scutellaria*, a suitable sort either for pot or border culture; also blue *Scillas*, *Ficarias*, and *Saxifraga diapiensoides*, a dwarf kind with white flowers, like those of *S. Burseriana*. Mr. Dean, Bedford, exhibited a group of *Primroses*, among which were single and double kinds possessing various colours, such as purple, white, crimson, yellow, mauve, lilac, and intermediate shades. Large-flowered blue *Aubrietias* and brilliantly-flowered *Polyanthuses* also came from the same grower. Mr. Wiggins, gardener to H. Little, Esq., Hillingdon, showed *Cinerarias* very dwarf in habit, and having well-formed, finely-coloured flowers. From Chiswick came remarkable plants of *Hebelcolum inanthum*, with large bronzy leaves and *Ageratum*-like heads of blossom; also well-grown examples of *Primula rosea* and *P. denticulata*. Messrs. Veitch & Sons showed standard plants of *Lilac Charles X.*, having clean stems 4 ft. high, surmounted by large, round heads of blossom; also a fine panful of the sweet-scented Australian *Boronia megastigma*. Messrs. Cutbush & Sons, Highgate, exhibited several boxes of cut blooms of *Camellias*, among which we noted large flowers of *reticulata*, the well-known kind called *Chandleri*, and many of the best white and striped kinds. The same firm also showed a group of *Epacris*, among which were plants having white, pink, and rose flowers, and various intermediate shades of these colours. Mr. Green showed blooms of *Abutilon venosum*, a kind with palmate leaves and large crimson-striped flowers of large size. Mr. Howe, gardener to A. Smith, Esq., Streatham, showed fine blooms of *Rhododendron Nuttalli*, and Mr. Heims, gardener to A. Philbrick, Esq., fine blooms of *Odontoglossum nebulosum paradinum superbum*. Mr. Wiggins furnished, amongst *Cinerarias*, *Dolly Little* and *Rosa Little*, two dwarf kinds, the former having purple flowers with white centres, and the latter white flowers edged with blue. Mr. Hovey again showed *Camellia* blooms, consisting of kinds already alluded to in THE GARDEN. Mr. Hunter, Lambton Castle, contributed plants of *Valeriana Phu*. The Rev. J. T. Boscawen showed a plant of the white-flowered *Rhododendron* Mrs. Townshend Boscawen.

The prizes offered for new *Amaryllises* brought but little competition, the only prize awarded being to Mr. Speed, Chatsworth, for a plant bearing a remarkably strong spike of scarlet blossoms with white centres—six in number.

AMERICAN NOTES.

A Useful Turf-cutter.—For making a small lawn it is far more expeditious and satisfactory in all respects to lay down turf, if it can be procured, than to sow seeds, and even where the surface is too large to be turfed sods are almost indispensable for those portions bordering upon roads or paths, as well as for the outlines of such beds as may be made in it. The usual method of cutting turf is to lay down a board of the desired width; the operator, while standing upon the board, cuts down on each side of it with a sharp spade; then, lifting an end of the strip with the spade, one person rolls the

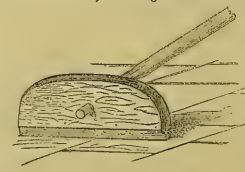
turf, while another, with the spade, cuts away the roots that penetrate the soil below. A roll made of a strip 12 ft. long is as large as two persons can conveniently handle. A new turf-cutter, made as follows, has been found to be an improvement on the old method:—The body of the cutter (A) is a block of hard wood, 10 in. thick, 12 in. wide, and 3 ft. long; the cutter (B) is a strip of $\frac{1}{4}$ -in. iron, 3 in. wide, and bent at the ends at right angles to fit the block, as shown in the engraving; one side of this is hammered thin and ground to an edge, not only along the horizontal part, but for 3 in. or 4 in. on



Home-made Turf-cutter.

the turn-up portions. This is then firmly bolted to the block, the distance below it being governed by the thickness at which the turf is to be cut. The lower part of the block, immediately above the knife, is hollowed out to allow the turf to pass easily between the block and the cutter. There is, of course, an arrangement for hitching a horse to it, and a couple of handles, like plough handles, are attached to allow the implement to be guided. The block may be weighted, if necessary, to keep it down.

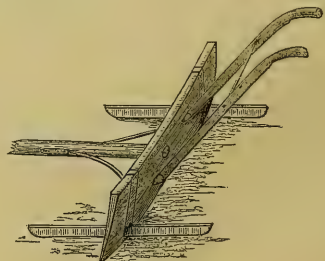
India-rubber Floor-wipers for Greenhouse or Dairy Floors.—There is an article called the "window-wiper," which is coming into very general use in cities. It is a strip of vulcanised India-rubber, about $\frac{1}{2}$ in. thick or less, fastened upon the edge of a



Stone Floor-wiper.

flat piece of wood, and projecting from it as an edge, as seen in the engraving. This is used to clean windows, and being wiped over wet glass leaves it clean and dry. The effect of a similar use of the wiper, or of a stronger one adapted to the purpose, upon wet floors, is to sweep and wipe the floor, leaving it clean and nearly dry, much better and more rapidly than any mop or broom, or both combined can do. In fact, in greenhouses, dairies, and kitchens, when once tried, it becomes almost indispensable, and upon cement floors, where water can be freely used, it is efficient in its action, both cleansing and drying the floor very rapidly.

An Improved Road-scraper.—If the operation of an ordinary road-scraper be observed, it will be seen that it is faulty in one important point, viz., that it leaves the hollows as it finds them, if, indeed, it does not scrape them out deeper. It simply smooths the surface, but does not level it. By the simple addition of runners



An Improved Road-scraper.

by which it is kept from falling into the hollows, it will draw earth into them instead of scooping them out. The runners are raised 1 in. or 2 in. above the bottom of the scraper. It will thus scrape up the loose soft earth and deposit it where needed, that is, in the hollows, thus levelling as well as smoothing the surface. The form of the improved scraper is represented in the annexed engraving.—"American Agriculturist."

"This is an art
Which does mend Nature: chance it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

TOMATOES EVERY MONTH IN THE YEAR.

HAVING been very successful in the cultivation of Tomatoes, allow me to give an account of my mode of treatment, and to show how Tomatoes may be obtained every month in the year. To the main crop I have a house exclusively devoted. It is span-roofed, 45 ft. long and 11 ft. wide, and runs from east to west, but it would have been better from north to south, as in that way more light and sunshine are secured. In the house in question, though I plant the largest plants on the north border, those on the south side soon shade them. I sow the seed the first week in January, and pot off the seedlings when fit to handle. I plant early in March, and from this house I have sent Tomatoes to market from the first week in May, 1878, to the first week in April, 1879. I pulled the old plants up in March, when I planted the fresh crop; but I put the green Tomatoes in a box, covering them up, and they coloured satisfactorily. The soil for Tomatoes should not be over-rich at planting-time; when fairly started they should have a good dressing of manure; but be careful as regards the use of fresh stable litter. They require liberal watering, and as soon as I see the first fruits setting, I give them liquid manure.

In the house above alluded to I have them planted 2 ft. apart. One row of Trophy is planted all round the house, and when the plants get up to the wires they are stopped and the next shoots are trained over the trellis-work. Then there is a row of the old Red, the plants of which run up a stick 5 ft., and are kept to single stems. Trophy is the principal cropper, and it is astonishing what a quantity of fruit can be got off a single stem; the plants fruit at every alternate joint, beginning about 1 ft. from the bottom. The front row on the north border is planted so that the plants do not face the back row of Trophy. Although Trophy is the kind upon which I most depend, its fruit being heavy—a great consideration where fruit is sold by weight and the plants abundant bearers—still, I would recommend your readers not to plant many of it, as it is not every one who can fruit it at first; but, after watching its peculiarities the first year, more of it may be planted. In the house just described I have had plenty of fruit, each of which weighed over 1 lb., and they were almost as round as an Apple. I am very careful as regards seed saving. Tomatoes planted here in March are now in flower, and by the first week in May fruit will be ripe. I should state that the whole of our Tomatoes are grown in heated houses.

In our late Vinery, which is 80 ft. long, I have a row 18 in. plant from plant on the back wall; these I fruit in the shape of single stems. I do not, however, expect these to do much good this season, as the Vines are now three parts up the rafters. Nevertheless, the Tomato plants being strong, may get up the wall before the Vine leaves shade them too much. Tomatoes are very accommodating after the fruit is set; but, until then, they require plenty of light. In this house, when the Vines were younger, I had as many as forty large fruits of Trophy on a square foot, but I cannot get that now. In July, 1874, I cut eight fruits of Trophy in a bunch, which weighed 6 lb. The largest single fruit I cut of this variety weighed about 2 oz. short of 2 lb. In this house last year I did not get many fruits at the bottom, but towards the top, especially in the autumn, the produce was excellent. I grow the same

varieties here—the old Red and Trophy—as in the early house, but I am trying a few of Hathaway's Excelsior and six plants of Acme. In growing Tomatoes on the single stem system it is necessary that all the side shoots should be pinched out.

Let me now give some account of a supplementary crop which I had in my Cucumber house, a lean-to 80 ft. long with an east aspect. At the end of September, having a fine lot of plants ready, I pulled the old Cucumbers up and planted Tomatoes in the same soil 12 in. apart, training them in the form of single stems up the trellis. These plants fruited well and supplied an abundance of Tomatoes from Christmas to the middle of February, when they were pulled up to make room for Cucumbers. Had it been possible to plant the Tomatoes two or three weeks earlier, they would have done better still; as it was, I found that very few fruits set after Christmas, but doubtless more sunshine would have made a difference.

As to varieties, first on my list stands Trophy, but this requires room to run, and but little fruit is got off it till it reaches the wires. This is the finest flavoured of all I have tried; it is always admired for its fine appearance, and with those who eat the fruit raw as grown it is a great favourite. I find this kind to require starving in order to get the first blooms to set; after that more liberal treatment may be given. Secondly, the most useful sort for general cultivation is the old Red, and, with liberal treatment, this variety acquires a larger size. I weighed some of the fruit which I raised in the Cucumber house at Christmas, and found them to weigh 8 oz. and 9 oz. each, although this is a light-weighting variety. Winter fruit do not turn the scale as that grown in summer does. In regard to Trophy, I forgot to mention that after the first fruits are set, it should never be allowed to get dry or the fruits will crack, and it requires plenty of ventilation. Of Acme I had some good fruits last year at the end of June, but later on when I wanted them they failed to come, and they cracked very much. I will not, however, condemn it, as it was grown in a Vinery, and the treatment was not such as I should have given it anywhere else.

In saving seed, as soon as the fruit is ripe, take the seed out, or it will spear and be useless. I have grown Tomatoes in large pots very well; Keyes' Early Prolific and Earley's Defence are very suitable kinds for this purpose. During some years I have planted Tomatoes 3 ft. apart and trained up three stems, but in that case one must keep all the side shoots well pinched in. Acme, being so prettily coloured, is well worth growing, and it is a kind that is well flavoured.

In order to have Tomatoes in perfection, they should remain on the plant till they are ripe. This is my plan, but in clearing out the old plants any fruit that happens to be unripe should be placed in layers in baskets or boxes covered over and kept warm. Under such conditions, they soon acquire colour, and are fit for market. It is astonishing the length of time they will hang after they have become red. Being troubled with wireworm, in planting we cut a Potato into two or three pieces and place them about 4 in. from the stem. These act as traps, which can be examined every third day and the wireworms destroyed. I have found these pests to be very troublesome in new soil, but after the plants get fairly established they sustain no harm. The chief points in Tomato growing consist in having strong plants to begin with, then plenty of water, afterwards liberal feeding, and abundance of ventilation. My practice is, as soon as the fruit sets, to take out the centre piece of the leaf, an operation which assists the swelling of the fruit.

STEPHEN CASTLE.

Broadwater, Worthing.

VEGETABLES AND FRUIT GROWING FOR MARKET.

The information which Mr. Groom gives (p. 237) respecting fruit culture in Kent is interesting; but quoting the fact that "really first-class Koswick Codlings fetched only 2s. per bushel" does not prove that fruit culture generally was unprofitable in Kent at the time of which he speaks. There are losses to be borne in every business, and I do not suppose fruit culture to be exempt from them at times. Now, if those interested will turn to Vol. VIII. of *THE GARDEN* (p. 465), they will find an instructive account of Kentish fruit culture, from which I venture to make a few extracts. At Sittingbourne is a 9-acre plot of Cherries and hard fruit, which has yielded £30 per acre, on an average, for five years. An old plantation of the same, which lies well near Barden and Tunstall, has produced an average of £34 per acre for thirteen years. A little estate of 88 acres has for fourteen years yielded fruit worth £19 9s. 6d. per acre. The lowest average quoted is £13 14s. per acre for thirteen years, other plantations having furnished a yearly average of £20, £19, £27, and £17 per acre, the bottoms for grazing being let at £2 per acre, an allowance being made to the tenant for a proportion of rates and tithes. A plantation of Green Gage Plums at Gillingham "bore abundantly one year, making, I believe, more than £100 per acre. The owner was offered £50 an acre for the fruit on the whole 28 acres (£1400), half of which was not nearly so valuable as the Green Gage part." So much for Plum culture. In the same paper as much as £100 per acre is mentioned as having been obtained in exceptional seasons by the culture of Gooseberries, Black Currants, and Kentish Cob nuts. For the very ordinary systems of fruit culture now generally adopted, however, these last returns are as exceptional, on the one hand, as Mr. Groom's illustration, to which I have alluded, is on the other. From a proprietor's point of view, fruit culture in Kent, as elsewhere, is profitable, much more so than some would have us believe, seeing that land suited for fruit culture is worth more by 50 per cent. at least than other ground in the same neighbourhood equally good, but under arable or pasture crops. There is much market garden land in Kent, and also around London, let at from £4 to £6 per acre, while close alongside such plots, similar land planted with fruit trees fetches from £10 to £15 per acre, and is considered to be better worth the money. These facts speak for themselves, and show very plainly that it would pay landed proprietors to plant good land near towns with suitable fruit trees, previous to letting it to market growers. That fruit and vegetable crops are profitable on the farm, even although they cost more producing and marketing than ordinary farm produce, is well known, and we even find Mr. Mechi growing Strawberries and Peas for market on his farm at Tiptree, and we can scarcely believe he would risk lowering his yearly balance sheet unless he thought that they would yield a good profit.

Mr. Groom tells us that London is not always the best market for fruit, and that the cost of carriage and marketing Apples from Kent is 1s. per bushel, a very moderate cost, seeing that Cherries from the same county cost 3s. per sieve for gathering and marketing. Large quantities of good fruit are wasted in fruitless seasons; hence the reason I have so often recommended that the unsaleable surplus should be preserved or canned, as is done in America and France. I took exception to "C. W. S.'s" statement, that "both for hardy and indoor fruit there is always a ready sale," because that statement certainly "fails to fairly represent the case," especially when on the very next page (p. 200) we are told that "hundreds of bushels of good Plums, Apples, and similar fruits are allowed to rot," which proves most conclusively that there is not always a ready sale for them, even "at a price" that is barely remunerative. The same market is open to both home and foreign growers, and, as I said before, home fruit growers must protect themselves. The best proof that foreign growers do, on the whole, export their fruit at a profit is that the imports generally increase, which they would not do unless a profit were made.

As to the fruit v. meat-growing question, it is admitted that more than £100 worth of fruit and vegetables can be produced on two acres of good land in three years. Now is it possible to obtain £100 annually from 6 acres of a meat-producing farm? He would be a successful man indeed who could make £2000 a year from a meat farm, or any other farm of 300 acres, unless fruit and vegetables be grown; and yet this is only about half of what the farm should yield, if it be true that large holdings give better returns than small ones, or if the results are to be equal to those derivable from fruit and vegetable culture combined, and they must be so combined if the best results are to be obtained. I am well aware that fruit crops generally are not so certain as vegetable crops or farm crops, and yet if a fair crop be produced once in three years, fruit culture is too remunerative to be abandoned. There is a fruit, vegetable, and flower farm at Fulham for which a rental of £12 per acre has long been paid, and I am told the proprietor is satisfied with a fruit crop every three

years. The market gardeners are far better off than the farmers, so far as foreign imports are concerned. The American growers cannot compete with our own in the production of fresh, soft fruits or vegetables, as they do in the farmer's case in the production of fresh meat and corn. All over the country our farmers have had from 5 to 10 per cent. of their rents remitted by their landlords during the past year, and if this has been done in the case of men paying from 40s. to 50s. per acre only, how is it that market growers of vegetables and fruit, who pay from £4 to £15 per acre can afford to do so, if it be not that this branch of land culture is more profitable than farming? Proximity to London or other large towns does not wholly account for the high rents paid by market growers, nor does the cost of planting, since in most cases this has been done at the tenant's own expense. Good land is worth more to them than to any one else, unless it be the speculative builder, and this is the principal reason that high rents are paid.

It is easy to see that the market grower's position is not so good as it was; the fact cannot be denied that cheap imports have lowered his profits, and his remedy is to grow better crops than those imported at an equal or lower cost. If manual labour is too expensive he must use horse power. The land must perforce be cultivated and increased crops must be obtained; again we must meet the foreign imports and their tendency to lower home prices by growing more fruit and vegetables, especially of such easily-damaged kinds as will not bear carriage well from abroad. The foreign grower obtains the best general price for his fruit during our times of greatest scarcity; hence we may compete best with him by extending our fruit and vegetable-producing area to its utmost limit. The only real drawback to a more extended system of fruit and vegetable culture is the distribution question. Consignments of all garden produce sent to Covent Garden and other metropolitan markets are now in comparatively few hands; indeed, it is not going too far to say that the fruit salesmen have it in their power to form a "ring" by which the wholesale prices are fixed. They have comparatively no risk, and yet they monopolise a large share of the profits of the grower, and increase the cost to the consumer as well. As I have before said, they favour the influx of foreign fruit, because the rapidity of open auction sales affords them a better chance of speculating with advantage to themselves. I have often thought that if a little of that spirit which induces fruit growers to let their produce rot on the ground rather than market it when profits are too low to be worth their notice, had been displayed by them at the first auction sales of foreign produce, they might have competed to better advantage with their opponents.

The Continental grower, however, of both fruit and vegetables makes his greatest gains by bringing his produce into the market two or three weeks earlier than our own climate will allow being done. Our own cultivators must undersell him at all other times. Large growers of fruit or vegetables can never deal directly with the consumer; they can sell their fruit by auction, or instead of sending it to London, which it appears is not always the best market, they might place agents of their own not only in London, but also in all our principal provincial towns, and then trust to the telegraph wires in order to find the best market. For the sale of the finest fruit especially, a co-operative fruit store might be tried in London with advantage, and, if carried out on a broad basis, such an institution would be sure of success, for then people would buy their fruit, as they now buy their other supplies, with far more comfort than they can possibly do in Covent Garden. F. W. B.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

The Regent Potato.—This variety which has been so much eulogised by several contributors could not be mistaken for Dalmahoy. The Red Regent is the best as a thoroughly good second early sort, fit for raising the first week in August if planted in March.—E. P. LEGGE.

Dwarf Peas.—These must not be wholly condemned. No two better Peas can be grown than the Kentish Invicta for a first crop, and Hare's Dwarf Marrow, which I never found to exceed 4 ft. in height. Concerning the last named, the verdict I have always heard is "Could not be better."—EUGENE P. LEGGE, *Court House, Linton Cheney, Dorset.*

Earthing up Potatoes.—Whatever may be the necessities of Potato culture in fields that in gardens should not be performed in the same off-hand way, and no implement can well be more unfit for the purpose of earthing up Potatoes than the hoe. Misled by the instructions commonly given as to planting in rows at 2 ft. apart, &c., persons continue planting so close together that when the haulm or shaws are above ground, they are driven to the necessity of using the hoe as an earthing implement or of doing nothing. In-

stead of planting at 2 ft. apart, let the rows be according to the sort, from 2 ft. 6 in. to 3 ft.; use a fork to earth up with instead of the hoe, and far better results will be obtained. It is an excellent plan to line out the ground to be planted in widths as may be required; then in digging work down each portion, and throw it into a ridge. When this has been done throughout the entire piece to be planted, the furrows should be forked over deeply and left lying as fine and loose as possible. At planting time strain a line along the furrow, draw a shallow drill with a hoe, in order that the sets may lie regular and even; plant and dress with artificial manure, wood-ashes, soot, or other useful light compounds; then fork down the finer surface of the ridges, and cover the tubers to a depth of 4 in. When the plants are through the soil, fork over the intervening spaces, and when the haulm is from 6 in. to 8 in. in height, earth up carefully with a fork, and perform the operation again some eight or ten days later, leaving the ridges sharp and neat throughout. With such wide cultivation it is possible to plant winter Greens between the rows, and a good dressing of manure may be worked into the furrows before planting. The crop resulting from the wider space allotted will certainly repay the extra trouble.—A. D.

Lettuces Running to Seed.—The German plan (see p. 296) of preventing this cannot be called new, as it has been practised here for many years. Our mode is to cut the stem nearly three parts through, securing the Lettuce to a stake, and inclining the head to the north as much as possible. During hot weather in summer, when any deficiency is likely to happen between the different plantings, we have, by means of this method, prolonged the supply for at least a fortnight. I have known German Greens, grown for competition, to be treated in a similar manner, in order to prevent them from bolting.—DAVID MURRAY, *Cutcean, Ayrshire.*

THE INDOOR GARDEN.

HOYA CARNOSA AND BELLA.

THE best known and most useful species of this handsome genus are *H. carnosa*, a fast-growing creeper, and *H. bella*, a dwarf and more delicate growing kind. Both have thick, fleshy leaves, and both produce abundantly for a considerable period in summer, clusters of wax-like flowers, from the centre of which exudes a single drop of a honey-like fluid, which has led to their receiving the name of honey plants. Although these two species of *Hoya* are commonly classed as stove plants, and they may, indeed, be cultivated successfully in a stove, yet *H. carnosa* will grow equally well in an intermediate or warm greenhouse, and will often flower more freely in such a structure than in the stove, simply because its drier atmosphere leads to the better maturation of the wood, without which flowers must be scanty. In the stove the plant should stand in the full sunshine during the time the growth is being made. When grown in a low temperature it must not be over watered in winter; indeed, during that period this class of plants should be kept comparatively dry. If ever disease overtakes the plants it is generally caused by using too large pots, and plying the watering-pot too freely in winter, when but little root-action is taking place. Very large plants of *H. carnosa* can be grown in very small pots; indeed, I saw a large plant last year growing on the back wall of a damp stove that had absolutely no soil at all. It had originally been planted in a small chink of a border in the back path, but the branches, wherever they touched the damp surface of the wall, had thrown out roots like those which the Ivy generally and Fig sometimes do, and when I saw it the connection with the border had been a long time severed without having produced any effect upon the plant's health or progress.

Both *H. carnosa* and *H. bella* make admirable basket plants; indeed, they show to better advantage treated in that way than in any other, as their drooping flowers seem intended to be seen from beneath. *H. bella* is especially a choice subject for a basket, but its culture must be confined to the stove. It is not so hardy or robust in constitution as its vigorous relative, but it is more elegant in appearance, and in a choice collection

of stove plants it will always attract attention. Like many other of our choice-flowering hothouse plants, the taste for foliage has driven them, temporarily, into the background, but plants, in themselves so beautiful, cannot long remain in obscurity.

The main cause of failure (where failure occurs) in the culture of this class of plants is potting in soil of too close a texture. *Hoyas* are impatient of stagnant moisture about their roots, and the material forming the root medium must be of a porous character. In potting specimens of considerable size, the pots must first be well drained; more attention should be paid to this, in this case, than is customary or even necessary for the general run of stove plants. The soil should consist of about equal parts of good turfy loam and peat, pulled to pieces with the hand, and the fine, light particles should be shaken from it so that only the turf remains; to this should be added about a sixth part of sand and the same quantity of broken charcoal. In such material the plants may be firmly potted, leaving sufficient space at the top in proportion to the size of pot used, for giving water, as in the growing season the plants delight in and require a liberal supply of moisture both at the root and in the atmosphere. It is only stagnation that must be avoided. In potting small plants the turf should be broken up small, but never sifted.

The best position for *H. carnosa*, if grown in a pot, is trained on a wire trellis just under the roof, or it may be trained over a wire trainer, either globular or of any other desired shape. *H. bella* must be neatly supported with small stakes, but no more than are necessary should be used, as they add nothing to its beauty, and the roots of a plant are often injured by having the ball honeycombed with stakes. A very handsome basket of plants for suspending in the stove may be filled in the following manner: A plain wire basket of a suitable size should be procured, 10 in. in diameter and 6 in. deep, which will grow a fine specimen. The bottom and sides should be lined with Moss, and towards the top of the basket should be worked in half-a-dozen small plants of *Panicum variegatum*, with the ends of the shoots hanging through the wires, which will be pegged under the bottom, and form a beautiful covering for it. In the top of the basket should be planted five or six healthy plants of *Hoya bella*, pressing them in firmly and then covering all in neatly with Moss. After the plants are well established the basket may be hung in the full sunshine, except when the *Hoya* is in flower; then a little shade will be beneficial. Most of the *Hoyas* are readily increased by cuttings of soft, young shoots in sandy soil in a brisk bottom heat, either with or without the assistance of a bell glass. If a plant should become sickly, it is best to start afresh with a young one, and they are so easily propagated that a few young plants of *bella* might always be coming on. Plants in a bad state of health are difficult to restore, as it, in nearly all cases, arises from decay of the roots through imperfect drainage, or the soil having become close and sour. There was years ago a variety of *bella* under the name *Paxtoni*, if I remember rightly, that had a slightly more vigorous habit, but otherwise resembled it. When mounted on wire the flowers of all the species are useful for bouquet making, although if used too freely they impart to the bouquet a rather too formal an appearance.

E. HOBDAY.

Primula amoena.—I observe that Mr. Gumbleton alludes to this beautiful Japan Primrose as *Primula Sieboldi*. It would be well if this appellation were universal, but I hesitate to employ it until botanists have decided as to its proper title. I wish now to say that it is not possible to display the full beauties of this handsome *Primula* until it has been grown for a couple of years in large pots. The crowns are then thick, the foliage abundant and dense, and the flowers thrown up strongly and in abundance. Early in its growth

the foliage is crowded up into a mass, but as it lengthens in stem, it falls in a graceful way round the pot, and the numerous flower-stalks carry a very ornamental head of bloom. It is an especially beautiful species for the cool greenhouse or conservatory.—A. D.

ABUTILONS GROWN FOR TRIAL AT CHISWICK.

BY A. F. BARRON.

THE following varieties were all propagated from cuttings early in spring, and grown and flowered in pots in a cool greenhouse. For this purpose few plants can be more highly recommended, or are better adapted for the autumn decoration of the conservatory. Good plants planted out early in June will grow and flower well, and are very suitable for the sub-tropical garden.

Classification as to Colour of Flowers, &c.

FLOWERS WHITE.	Simon Delaux.	FLOWERS ORANGE.	stratum.
Boule de Neige.			stratum variegatum.
FLOWERS YELLOW.	Darwin.		Thompson.
Lemoine.	Darwin compactum.	FLOWERS YELLOW.	
Perle d'Or.	Darwin grandiflorum.	CALYX COLOURED.	
Reine d'Or.	Darwin majus.	Megapotamicum.	
FLOWERS LILAC.	Darwin tessellatum.	Megapotamicum variegatum.	
Anna Crozy.	La Lorraine.	Megapotamicum venosum.	
Comtesse de Medici Spada.	Prince of Orange.	vestitulum.	
Lilacum album.		VARIETIES WITH VARI-	
Louis Marignac.	FLOWERS PURPLE.	GATED LEAVES.	
Souvenir de Maximilian.	insigne.	Thompson.	
FLOWERS ROSE.	Louis van Houtte.	Darwin tessellatum.	
Alphonse Karr.	Souvenir de St. Maurice.	niveum marmoratum.	
Darwin robustum.	FLOWERS STRIATED,	Megapotamicum variegatum.	
Le Griot.	YELLOW.	Sellowianum marmoratum.	
Le Progrès.	Beranger.	stratum variegatum.	
rossiflorum.	Montgolfier.	vestitulum.	
rossum floribundum.	niveum marmoratum.		

ANNA CROZY (Bull).—Plant of robust, vigorous growth; fine habit; flowering freely late in the season; good for winter flowering. Leaves large, broad. Flowers large, and of finely cupped form; pale lilac, with dark veinings. Very pretty.

ALPHONSE KARR (Lemoine).—Plant of tall, free growth, and fine branching habit. Leaves small, deeply cut. Flowers small, of fine rounded form, borne on long slender stalks; colour reddish-orange, with dark veinings. Free flowering.

BERANGER (Van Houtte).—Plant of tall, erect habit of growth; not branching. Leaves large, deeply cut. Flowers very large and elongated, of a clear pale orange colour, beautifully streaked with dark brown. Very showy, but somewhat shy flowering.

BOULE DE NEIGE.—Plant of fine free-branching habit. Leaves of medium size, somewhat pointed. Flowers of medium size, of finely-cupped form; pure white. Very free flowering. Excellent.

COMTESSA DE MEDICI SPADA (Van Houtte).—Plant of strong, robust growth. Leaves large, woolly. Flowers of medium size; pale lilac. Very shy flowering. Worthless.

DARWINI (Lemoine) (Fraser).—Plant of free, vigorous growth. Leaves large, broad. Flowers bright orange, with darker veinings; fine-cupped form. Not free flowering.

DARWINI COMPACTUM (Lemoine).—A compact-growing, free-flowering variety. Flowers reddish-orange. Inferior.

DARWINI GRANDIFLORUM (Bull).—Plant of fine habit. Leaves large. Flowers very large, of longish form, of a pale orange colour, with dark veins. Free flowering and good.

DARWINI MAJUS (Lemoine) (Bull).—Plant of smaller growth, but in other respects very similar to D. grandiflorum.

DARWINI ROBUSTUM (Lemoine).—Plant of fine, compact habit. Free flowering. Flowers orange, shaded with rose; of fine form. Distinct and good.

DARWINI TESSELLATUM (Veitch).—Plant of fine, robust habit. Very free flowering. Flowers bright orange, similar to Darwini. Leaves large, broad; beautifully variegated or marbled; light green and yellow. A very ornamental plant, whether in or out of flower.

DUC DE MALAKOFF (Fraser).—Plant tall; free growing; not flowered.

LOUIS MARIGNAC (Bull) (Lemoine).—Plant of fine habit. Very free flowering. Flowers large, of finely-rounded cupped form; clear pale lilac colour, with slight venations. Very pretty. Distinct. One of the best. First-class certificate.

LOUIS VAN HOUTTE (Bull).—Plant of compact habit of growth. Free flowering. Flowers large, of fine cupped form, but somewhat rough; dark purple colour, with white throat. Distinct and beautiful.

MONTGOLFIER (Van Houtte).—Plant of tall, free growth. Leaves large, deeply cut and pointed. Free flowering. Flowers large, much expanded, of loose form, of a dull pale yellow colour. Worthless.

MEGAPOTAMICUM (Van Houtte).—Plant of slender, spreading habit. Leaves small and pointed. Flowers small, bell-shaped, and

singularly beautiful, the calyx being dark red, the corolla pale yellow, and the stamens dark brown, in very pleasing contrast.

MEGAPOTAMICUM VARIEGATUM (Van Houtte).—A variegated leaved form of the preceding.

MEGAPOTAMICUM VENOSUM (Van Houtte).—A very tall, strong-growing variety of Megapotamicum.

NIVEUM MARMORATUM.—Plant of free growth. Leaves large, broad, downy, beautifully marbled pale green and yellow. Flowers of medium size and loose form; yellow, streaked with dark orange. Valuable as a handsome foliage plant, and very suitable for bedding.

PERLE D'OR (Bull).—Fine dwarf-growing habit. Free flowering. Flowers of fine, rounded, cupped form; of a pale Primrose colour. Very pretty. A good variety.

INSIGNE (Williams) (syn. igneum).—Plant of tall, free growth. Leaves large, heart shaped; very thick and rugose; deep green; stem covered with short brown hairs. Flowers borne on long and slender panicles; the petals short, broad, much reflexed, of a dark purplish-crimson colour, with dark venations. A late autumn or winter-flowering species. Very distinct and beautiful.

LA LORRAINE (Bull).—Very similar to Darwini grandiflorum.

LE PROGRES (Bull).—Very similar to roseum floribundum.

LE GRELOT (Bull).—Plant of fine, compact habit. Free flowering. Flowers large, and rather long; finely cupped; of a pale rose colour, with dark venation. A very beautiful variety.

LEMOINEI.—Plant of fine, free habit. Leaves large, somewhat pointed and toothed. Free flowering. Flowers large; pale yellow; of finely-cupped form, borne on short stalks. A very fine variety.

LEMOINEI (Van Houtte).—Same as Duc de Malakoff, of Fraser.

LILACEUM ALBUM (Bull).—Plant of vigorous growth. Flowers large, of a pale lilac colour; finely-cupped form. Very pretty, but considered inferior to Louis Marignac.

—“Horticultural Society's Journal.”

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Failure of Lily of the Valley.—Many have had their Lilies of the Valley fail this year; but the fault, I think, cannot lie with the Lily clumps or eyes, as we have had, and still have, this season some of the finest which I ever saw. Our clumps, which are obtained from two Dutch firms, have thrown up from twenty to thirty spikes each. I have always found Dutch clumps preferable to Belgian. My opinion is, that protecting the clumps before putting them in to force is the main cause of failure. I find the harder they are frozen the better they flower, and the quicker they come into blossom. I also find that placing enough dry Moss to hide the eyes loosely on the tops of the pots when they are put in to force of great service. Our conservatory now is very gay with hundreds of Spiraeas, quantities of Azaleas, Rhododendrons, Imantophyllums, Amaryllises, and Orchids.—JAMES O'BRIEN, Pine-apple Nursery, Maida Vale, Edgware Road.

Thunbergias.—Any one in want of a good useful conservatory plant should now sow in gentle heat a supply of Thunbergia alata and T. aurantiaca, both of which form charming edgings for masses of other plants, or for draping stages or baskets, or, indeed, setting off to advantage any arrangement of decorative plants, as, in addition to their bright and cheerful flowers, their habit is drooping and graceful, and they look extremely well in suspended baskets. Such plants conceal angularities, soften down hard lines, and give arrangements strictly artificial a more natural appearance than they otherwise would have.—J. GROOM.

Conservatory Climbers.—I am about to add a conservatory to my villa at Torquay. It will be erected against the side of the house, and be between 40 ft. and 50 ft. long; the entrance hall will be reached by crossing it, so that it will be divided into two beds, surrounded by a path 4 ft. wide. Pillars and arches will rise on each side of the path, on which I desire to train a choice collection of flowering climbers. Having long been accustomed to a similar edifice, I am well acquainted with the ordinary decorations of a conservatory, but I wish to inquire of readers of THE GARDEN if any distinct plants have come under their notice that I might add to my collection. The numerous additions to our horticultural treasures may have introduced some hitherto unknown, or the constitution of some plants may have developed themselves so as to render them suitable denizens of a house of a lower temperature than a stove. I would, however, mention that to suit an invalid member of the family the conservatory in question will be kept at a higher temperature than houses of this description usually are, as the boiler is intended to heat the rooms of the villa, which must be kept at the same temperature five or six months of the year. The late Mr. Smee, in “My Garden,” mentions Stigmaphylla ciliata as thriving as well

in a conservatory as in a stove. Can any reader of THE GARDEN confirm this statement from experience? Is *Thunbergia natalensis* likely to succeed? and what *Passion-flowers* and *Bignonias* can I plant with a fair hope of success? I had for many years in a conservatory *Bignonia venusta*, the branches of which were about 40 ft. long, but it never produced a single flower. Will the different *Bougainvilleas* answer my purpose? What tropical Ferns of striking appearance can I grow at the northern end of the house, where it is intended to fix the boiler? The names of from twelve to twenty would be welcome. Has any one ever bloomed *Gelsemium sempervirens*, which old writers eulogise? I had it for some years, but discarded it from its total absence of flowers. It is now used in medicine as a sedative.—J. L.

Flowerless Stephanotis.—There can hardly be any doubt that the flowering of the *Stephanotis floribunda* is much influenced by culture, but there can be just about as little doubt that there are free-flowering and shy-flowering varieties of the same plant. It is a well-known fact that the *Stephanotis* is frequently raised from seed, and, considering how much seedlings of most plants vary in habit and floriferousness, there is nothing surprising in the fact of there being what are called "flowerless varieties" of the *Stephanotis*, and

Pelargoniums, and similar plants, furnishing as it does a soft tint of colour. We have used it for this purpose the whole winter, as well as for cut bloom, which looks well in the daytime, but not under gaslight. I would recommend all who require cut bloom in quantity to grow it, feeling sure that they will not be disappointed. Our plants of it for conservatory decoration have been grown on in a greenhouse, the temperature of which is generally about 45° to 50° at night, with a rise of 10° by day. This variety is far in advance of any *Ageratum* previously in cultivation, both for the flower garden and for house decoration.—J. C., *Farnboro'.*

HERBACEOUS PÆONIES IN THE WILD GARDEN.

THE accompanying engraving represents one of the most beautiful effects obtained in wild gardening by an Oxfordshire gentleman, who, when he took up the subject seven or eight years ago, had before that time paid no attention to hardy plants. Struck with the idea, he partially cleared out a portion of a neglected wood, and in it and by walks and glades leading to it, planted a great variety of the more vigorous hardy plants. Herbaceous Pæonies were amongst those that succeeded best in the past early summer, when our sketch



Herbaceous Pæonies in Wild Garden in Oxfordshire.

it is mere assumption to attribute all cases of failure to flower the plant to bad culture. Nurserymen profess not only to distinguish varieties by their free-flowering habit, and *vice versa*, but also by their foliage. Not long ago I saw, in a large nursery, many plants of what was considered an exceedingly free-flowering variety. The plants were of all sizes, from a one-year-old plant up to others covering a great part of the roof of a stove, and all flowering profusely, while beside them, and growing in a tub in the same house, was a large plant of the flowerless variety, with no flowers on it at all, and which I was told was kept simply as an example of its kind. We have also had the two growing in the same house here. One flowered profusely from the beginning, yielding basketful of bloom from both the young and the old wood, while the other flowered scarcely at all, and although the latter was a large and fine plant covering a large portion of the roof of the stove, we removed it, threw it on to the rubbish-heap, and the other plant now occupies its place.—CHEF.

Ageratum Lady Jane.—This is a very accommodating and useful plant for flowering in winter. It is easily cultivated, an abundant bloomer, and its blossoms continue for a long time in perfection. We have had plants of it in flower since the end of September. It associates well with *Primulas*, *Cyclamens*, *Scarlet*

was taken; the effect which they produced was very beautiful and striking, either close at hand or seen at a considerable distance off. Herbaceous Pæonies are amongst the most free, vigorous, and hardy of perennial plants, and with them alone most novel and beautiful effects may be carried out in most places where there is room. Even in comparatively small places, a group or two outside the margin of a shrubbery would be desirable. The effect of the blooms amongst the long Grass of the wild garden is finer than any appearance which they make in borders, and when out of flower they do not seem to be in the way, as they often are thought to be when in borders and beds. It is almost needless to speak here of the great variety of beautiful forms now obtainable amongst these herbaceous Pæonies, many of which are also very agreeably scented. The older forms were not remarkable in that respect, but rather the contrary. This, it will be seen, is part of a scheme for embellishing country seats with hardy flowers without interfering with the flower garden proper at all, and without relation to the long standing dispute as regards the merits of bedding out *v.* mixed borders.

Sophora speciosa.—A Texan correspondent writes to the "Gardeners' Monthly" as follows:—"We have a broad-leaved evergreen here, called *Sophora speciosa*, that is the perfection of beauty. It is a native of this region, and grows from 10 ft. to 20 ft. high. Its flowers, which are purple, are Pea-shaped, and are borne in large clusters, and very fragrant."

FRUIT CULTURE FOR MARKET.

ORCHARD FRUIT.—The end of July, and throughout the month of August, is perhaps the best time to see fruit in market gardens, but those who prefer floral beauty should visit them in April and May when laden with blossoms, and when the bright green leafage is just sufficient to tone down the too gorgeous display. A walk through Mr. Wilmot's grounds in the month of May is, indeed, a treat to any one who loves floral beauty; grand old specimen Pears, Plums, and Apples towering high overhead, intermixed with dwarfier-growing trees all loaded with bloom, are, indeed, a sight worth seeing. In the spring of 1877 there was probably the finest display of blooms ever seen near London, but, owing to the late frosts, the trees were soon left destitute of both flowers and fruit, and many growers suffered severe losses in consequence; each Pear and Apple tree, capable of bearing many bushels each, being in some gardens completely stripped. There is probably no body of men more alive to the value of the surface culture of the soil between fruit trees than market gardeners, and if we compare the crops produced in such market orchards as those of Mr. Dancer, at Sutton, with those under Grass, the immense advantage to the crops found in surface cultivation, dressing, and cropping is at once apparent. For the production of permanent orchard trees market growers give the preference to maidens, as sooner producing good fruiting trees. It is their impression that these develop into good trees sooner than two-year or three-year-old trees, because the removal from the nursery at an early age induces an earlier and better establishment in their permanent homes; also that these do not require staking and are not affected by the wind, as is the case with older trees, all of which require stakes and a larger amount of attention than it is sometimes possible to give them. Maidens, moreover, can be fashioned into any shape the grower may prefer, which is not the case with older trees. In sheltered orchards the standard is still preferred, but, where winds prevail, a dwarfier form of growth proves most advantageous. For the first few years a little careful pruning is given to the trees; but, when once established and in fruit, an occasional thinning of surplus branches is all that they receive.

Nearly all the orchard land in the neighbourhood of London is cropped with vegetables. Of what are termed Grass orchards there are but few; the land is too high rented to admit of its being thus applied. Bush fruits, Moss Roses, Wallflowers, and Lettuces form important under crops. Most of the orchard trees are of the old standard form, which are allowed to grow undisturbed, the only pruning they receive being simply the removal of dead or fruitless branches. But these tall, large-headed trees of olden times are rapidly giving way to dwarfier ones, and to those which can be trained in a convenient manner, so that little room is taken up and better fruit is obtained. As old trees die out, they are replaced by a very different form of tree from that formerly planted, and these are very differently arranged about the ground. Dwarf neatly trained trees are found to produce large crops of fine fruit in favourable seasons, and they afford greater facilities for gathering it when it is ripe than the old form of standard, and much expense and labour are thereby saved; vegetable crops, moreover, can be grown between them with far more profitable results than could be obtained under large, unwieldy-headed trees, the branches of which shade nearly every inch of ground. Should a failure in the fruit crop occur where dwarf trees exist, the loss is not so severely felt as it otherwise would be, on account of there being a good vegetable crop to fall back upon. Sometimes market gardeners cut back the branches of old and useless sorts of fruit

trees, and graft the stumps with kinds of a more valuable character. Mr. Wilmot, of Isleworth, practices this method extensively, and obtains in some instances remarkably good results, but as a rule such trees are felled and replaced by young ones. Orchard trees were at one time planted in rows, at distances varying from 10 ft. to 20 ft. apart, but in many cases these have been thinned by natural causes as well as by the felling axe, and old orchards that now exist have, as a rule, a very irregular appearance.

When market gardeners plant fruit trees to fill up blanks, they do not treat them as was formerly done, viz., plant them exactly in the same places occupied by their predecessors, to be choked and shaded by the overhanging branches of their more stately neighbours; on the contrary, they endeavour, as far as possible, to plant them several yards away from where the old roots were extracted, and by thinning out the branches of surrounding trees likely to shade them, afford the newly-planted ones a much greater chance of success than they otherwise would have. When old orchard trees have been cleared to make way for younger ones, or when entirely new orchards are formed, the trees are planted at much greater distances apart than used to be the case. Sometimes they are planted so as to form boundary lines, or afford shelter to vegetable crops, but the best arrangement which I have seen is to plant in rows from 20 yards to 30 yards asunder, and from 15 ft. to 20 ft. apart in the row, the vacancies between the trees in straight lines being filled up with Gooseberry or Currant bushes. By this arrangement, good lines of Apple, Pear, or Plum trees, with an undergrowth of bush fruits, are secured, and good breadths of land are left between the lines, which can be worked by the plough or harrow without injury to the roots of the trees, whereas, as formerly arranged, all the space left for vegetable crops had, of necessity, to be worked by the spade or fork. Another great advantage gained by this mode of planting is that of being able to gather the fruit, or perform other operations necessary to the fruit trees, without seriously injuring the vegetable crops. Such breadths of land as have just been described are admirably adapted for Radish culture or Mushroom ridges during the winter, and in summer Broccoli, Spinach, or early crops of Potatoes can be grown there to perfection. In orchards where overhanging trees exist, crops requiring light and sun cannot be grown with satisfactory results, and resort has to be made to such crops as Thyme, Sage, Rhubarb, &c. Herbs thrive tolerably well in such positions, and in the case of Rhubarb, the crop is usually gathered before the trees have made so much growth as to prove injurious to it. The branches, indeed, of the trees protect, in some measure, the crowns from cold winds and frosts, and thus promote earlier growth than would otherwise be the case.

PRUNING.—Market gardeners dislike pruning in all its forms; yet, of late, many admit that by using the knife judiciously better fruit is obtained in the case of young trees than can be got by leaving the trees unpruned. Many of them prune rather hard in order to get the trees well open in the heart at starting, so as to expose the branches to the influence of the sun and air, thus inducing fruitful spurs. When, however, this end is obtained, and the trees begin to bear fruit and rank growth is somewhat subdued, they fall back into their old system, and never prune at all, except, as before stated, merely removing decayed, unfruitful, or overcrowded branches. Suckers produced from the roots of the trees are carefully removed with as much root as can be obtained, tied in bundles, and laid in some out-of-the-way corner until a convenient time arrives for them to be planted singly in rows or disposed of to nurserymen. In the former case a well-manured and deep-dug piece of ground is selected, and, after having their roots

and stems trimmed, the stocks are placed thickly in rows, 2 ft. apart, the space between the rows being cropped with Seakale, Turnips, Cabbages, or similar crops until the stocks are fit for grafting or budding.

GRAFTING.—Nurserymen now-a-days do comparatively little grafting, budding being found a better and more expeditious method, but market gardeners adhere to the old system, and "work" the stocks some 6 in. from the ground, putting grafting clay over the incision, afterwards earthing it over with soil with a view to keeping it moist and inducing the grafts to "take" more readily than they otherwise would do. If the graft, as is sometimes the case, be put on the stocks 3 ft. or 4 ft. above the ground, with a view to make standards, they are bent down and pegged firmly to the soil and covered the same as the others. Market gardeners do not, however, often raise their own fruit trees; on the contrary, they obtain their chief supply from nurserymen, a method which they find, from experience, to be by far the most profitable, as they can, as a rule, obtain better trees, and the cost is much less than that incurred in grafting, planting, and otherwise attending to young stocks themselves; and, moreover, the ground that they would occupy is available for vegetable or other more remunerative crops.

CLEARING FRUIT TREES FROM INSECTS.—Lime is often dusted over old fruit trees to keep down caterpillars and other destructive insects, and limewash is frequently painted on the old stems after they have been thoroughly cleaned of Moss. This is done to prevent the further growth of Moss; but some gardeners consider it of little use, as the cause of Mossy fruit trees invariably arises from an imperfectly drained subsoil.

KENTISH ORCHARDS.—In these, the plan mostly adopted is to plant the trees (which are generally half standards), 22 ft. by 16½ ft., with Gooseberries or Currants between them 5½ ft. apart. The cost of the trees, bushes, and labour comes to about £20 per acre. In about three years the berries will begin to bear and to make some return. Trees grow faster and bear sooner in arable plantations than on Grass. The cultivation assists very much, and, of course, the more the land is manured the greater will be the crop.

THE APPLE.—Apples are cultivated in London market gardens to a greater extent than any other fruit, as, in consequence of the trees coming into bloom comparatively late in the spring, there is little fear of any injury being sustained by frosts, as in the case of many fruits, and thus good crops are more certain. Such kinds of trees as bear fruit of large size, and that possess a handsome appearance, are those chiefly cultivated, although some of the small kinds of dessert Apples are also grown. Fair Maid of Kent, Wellington, Stirling Castle, Blenheim Orange, Kentish Fillbasket, Yorkshire Greening, Keswick Codling, Barchard's Seedling, and New Hawthornden are amongst the favourite kinds of kitchen Apples; and for dessert, Devonshire Quarrenden, Kerry Pippin, Golden Noble, Ribston, King of the Pippins, Golden Knob, and Cox's Orange Pippin are sorts highly appreciated by fruit growers. Since our markets have been so abundantly supplied with Apples from America, English growers have been rather doubtful as to whether the increase of Apple culture would be remunerative; for, although London alone is capable of consuming all that are grown in England, even in a plentiful season, the prices obtained for them in such seasons by the growers scarcely recompenses them for the gathering. In a season of scarcity, on the other hand, foreign Apples keep the prices down so low that English growers do not get much higher prices than in a season of plenty, for the Americans are capable of sending us any

quantity, and it is only the low price which their produce would fetch in a good English Apple year that prevents them sending larger quantities. In the immediate neighbourhood of London, therefore, the culture of the Apple is by no means on the increase, for the land is high rented, and old orchards are being yearly cleared off to make room for the builder, and few care to speculate in a very large way in orchard planting. True, in old-established gardens the land is kept planted with trees, as it becomes necessary; but few new fruit gardens are made. Although Apples were at one time wholly grown in the form of standards—and, indeed, they are now to a great extent—yet dwarf pyramidal trees are mostly preferred. Tall standards, however, allow of crops being grown directly under them more conveniently than dwarfs; they are, in some gardens, planted in rows about 16 ft. apart one way, and 12 ft. the other. Dwarf trees are planted much more thickly than this, the distance between them for the past few years being only from 6 ft. to 8 ft.; afterwards, every alternate tree is removed, and what remain soon develop into good fruit-bearing trees.

The true Paradise stock is that on which nearly all dwarf Apple trees are now grafted, and the amount of fruit that is gathered from these dwarf trees is astonishing. Mr. Dancer, of Chiswick, grows large breadths of Cox's Orange Pippin in this way, and with the most satisfactory results. Stirling Castle and Hawthornden are also excellent kinds for dwarf trees, as are likewise Warner's King and Lord Suffield. Quality and quantity combined is the chief aim of good growers for market, and thousands of bushels of magnificent fruit find their way yearly to Covent Garden. Another advantage belonging to dwarf trees is that gathering, pruning, and other operations can be performed, as I have said, with comparatively little labour; and, moreover, the fruit gets so little bruised that nearly every one is sound and saleable. Sorting is seldom necessary, and if the crop from an acre of small trees be less in quantity than that from the same area planted with tall trees, it is, taking all things into consideration, probably the most remunerative. From Kent come larger consignments of Apples to the London markets than from any other of what are called the home counties, but the produce from individual Kentish orchards is probably less in quantity than that from market gardens nearer London, as in the latter vegetables are grown between the trees; therefore, the land is heavily manured and yearly trenched, operations which benefit the fruit trees. Mr. Charles Whitehead, in an interesting article on "Kentish Orchards," in the Royal Agricultural Society's journal, writes as follows in reference to this:—

"It is only recently that the occupiers of Grass orchards have discovered that fruit trees require a large and regular supply of manure, and that Grass land has more than enough to do, unassisted, to repair the waste caused by constant mowing or feeding off with animals getting their whole subsistence from it. Many Apple orchards of this description, which old men can remember as having been abundantly productive of Nonpareils, Ribston Pippins, Margils, Golden Russets, and other Apples of choice quality, rare size, and excellent flavour, have been grubbed up to make room for Hops. As the best land was invariably selected for Apple orchards, in times when Hops were not so highly esteemed, it is found that Hops always thrive remarkably well in the 'old orchard' grounds. Most of the Apples now produced on the Greensand are grown on land that is dug and hoed continuously, either upon full-sized standard or half-standard trees. The former, from too much or too little pruning, and neglect of long standing, are in an unsatisfactory state, not yielding a tithe of what might be expected. The half-standards, though not frequently met with, are comparatively young trees, having been trained in

the way they should go in more enlightened times, and their fruit is of better size and quality. The land is thickly covered with trees of various kinds, so that in midsummer it is often as difficult to force a way through some fruit plantations as through an ordinary copse, and it is a question whether the under trees, whose roots are nearer the surface, do not absorb the bulk of the manure and thus starve the Apple trees. Cultivated fruit plantations in Kent are seldom manured with farmyard or stable manure, as from its bulk it is difficult and expensive to put on land thickly covered with fruit trees.

Shoddy is largely used, at the rate of from 1 ton to 2 tons per acre, costing from 48s. to 100s. per ton, according to its per centage of ammonia. This is easily got in, and suits fruit trees well. Rags, both mixed and woollen, form a capital easily-applied manure; the quantity put on and the cost are about the same as in the case of shoddy. Fish manure, Rape dust, and the refuse from furriers' and tanners' shops are all good manures. I have tried superphosphate of lime without much apparent benefit. From kainite of potash put on fruit land at the rate of 7 cwt. per acre, it was thought that good results followed, though the effect of this manure could never be traced when applied for other crops; for Apples, like Hops, absorb an enormous quantity of potash from the soil. All manures are put on in the winter, and the land is dug afterwards with the Kentish spud used in Hop gardens (a tool having four flattened tines) as early in the winter as possible, before any bloom-buds are developed, so that the diggers may not injure them and rub them off. The plantations, or 'plats' as they are locally termed, are hoed over with plate hoes two or three times during the summer to check the weeds. In the formation of an Apple orchard intended for Grass it is found in practice to be best to plant the trees on well trenched land, and to lay it down after a few years, when the trees are well established. I have planted Apple trees of the excellent variety known as Lord Suffield on Grass land and on cultivated land at the same time, both being manured in the same way; those on the cultivated land grew away from those on Grass in a remarkable degree, and bore fruit the second year, while the others did not bear for three or four years. Apples are raised entirely from grafts. The tendency to reversion in this plant, in common with others of a fruit-bearing character, renders it impossible to depend upon plants raised from seed, or upon obtaining like from like. If the pips of the best sorts of Apples be planted, they reproduce heterogeneous varieties. When chance has developed a prodigy, it is a fact well known to fruit growers that this can only be surely perpetuated by scions or grafts.

Notwithstanding this, there can be no doubt that Apple trees produced from cross-fertilised seed would be more vigorous and fruitful than those reared in the usual way from a long series of stocks propagated by scions. Mr. Darwin shows most clearly in his recent interesting work that cross-fertilisation of plants improves them in most important points, and that continuous self-fertilisation through many generations tends to gradual degeneracy. The conclusions arrived at by Mr. Darwin, after a most elaborate exposition of experiments upon various plants, are that cross-fertilisation is generally beneficial and self-fertilisation injurious. This is shown by the difference in weight, height, constitutional vigour, and fertility of the offspring from crossed and self-fertilised flowers, and in the number of seeds produced by the parent plants. . . . After plants have been propagated by self-fertilisation for several generations, a single cross with a fresh stock restores their pristine vigour. There has been a fallacy prevalent, that trees raised from grafts do not survive the parent stock—that when an Apple tree dies, all those trees that have been propa-

gated from scions taken from it die in mournful accord. Mr. Knight, President of the Royal Horticultural Society in the latter part of the last century, firmly believed in this curiously unnatural provision, and attributed the decay of the best sorts to its action. Kentish growers now generally, however, discredit these absurdities, and attribute the decay of some old sorts, as the Ribston Pippin and the Nonpareil, in particular places to the exhaustion of essential elements in the soil, to bad treatment, to constitutional debility, and liability to blight and canker. To these causes may be added the change in the temperature, to which allusion has been made. The Crab is the proper stock upon which to graft Apples, but as the supply of these stocks is limited, the best stocks are selected from those that have been raised from pips for that purpose in a nursery, and are grafted with scions of the kind required. The stocks are chosen from those sorts which have clear, hard stems, and the trees are moved into the orchard when they are from four to five years old.

PRUNING.—Most growers cut young trees hard in the first year they are planted out, as this is supposed to favour root development. A most successful grower, however, objects to this practice, considering 'that the tree has enough to do to establish its roots without being weakened by cutting.' For the first few years the young Apple tree should be pruned so as to keep the middle well cleared out and the leading shoots as level as possible. When the tree is well established slight pruning only will be necessary once in two or three years. Very few growers prune their Apple trees scientifically or manage them thoroughly in other respects. Here and there a plantation may be found where the trees have received systematic and proper treatment from the date of planting, where good fruit is produced in abundance; and it is asserted confidently that the land in Kent really suitable for Apple growing may be made to yield fruit not much inferior in quality to the traditional Nonpareils, Scarlet Nonpareils, Golden and Ribston Pippins, and other sorts, whose sweet memories linger yet in the recollection of Apple-loving octogenarians. To ensure this, however, there must in most cases be a fresh start; the land must be unexhausted, the management more skilful, and the treatment altogether more liberal. It is better to prune Apple trees in the autumn, as soon as the fruit has been gathered, because it is more likely that fruit buds will be developed from pruning at that season than after winter cutting, which usually tends to create unproductive wood. The pruner of trees crowded with wood must aim at gradually cutting the oldest superfluous branches, so that each branch left may stand out by itself, and get a full share of air, light, and sun. If the fruit grower employ only ordinary labourers to prune his trees, he should examine each tree himself, and mark with chalk those branches which he thinks should be cut away. In the case of young trees that have been properly trained, and of older trees that have been reduced to a proper state by gradual pruning as above described, the amount of pruning required is very trifling. The fruit in most sorts comes upon spurs or short twigs on wood that is at least two years old, generally from buds that are covered till late in the autumn with clusters of dead leaves. The chief objects are to ensure a proper supply of these fruit-bearing spurs, and to keep them from being crowded and starved out by unfruitful shoots or suckers that grow out on all sides in many sorts. There are a few varieties, however, in which the fruit is grown upon slight shoots. These require thinning out and shortening if possible to prevent the fruit from receiving injury from wind.

VARIETIES.—The chief sorts grown in Kent are, [commencing with dessert Apples, the Ribston Pippin—the best of dessert Apples—now, unfortunately, a somewhat shy

bearer. The King Pippin is much grown in Mid Kent and the Weald; this is a handsome Apple when well grown, but it is inclined to be specky on the rag-stone, though doing better on the Weald clay. Joannettings and Summer Pippins (early kinds) are also grown and bring good prices. Red Quarrendens, Farleigh Pippins, Pearmaines, Nonpareils, Golden Knobs, which ordinarily keep well until Apples come round again, bringing high prices in Covent Garden Market, are found in most Kentish plantations and orchards. The Margil, whose flavour is nearly equal to that of the Ribston, and, as Dr. Hogg remarks, is of a better size for dessert, is too shy a bearer, and is not, therefore, extensively grown. The Blenheim Orange, a large and handsome Apple, is much grown near Maidstone and in the Weald. Cox's Orange Pippin has been planted extensively of late. This is a high-class Apple for dessert from November to January, supposed to have been raised from a pip of a Ribston Pippin. The principal cooking Apples grown in Kent are Keswick Codlins, Gooseberry Pippins, Hawthorndens, Northern Greenings, Wellingtons, Winter Greenings (all valuable sorts), the Golden Noble, and Lord Suffield (a very fine-flavoured, early-bearing sort). Tower of Glamis and the Manks Codlin are chiefly planted now. In most old Apple orchards there are several other sorts of little value, such as the Gough, an acid and very low-class Apple, but an abundant bearer. Cider is but little made in Kent now; its quality is comparatively poor, and the natives prefer beer, and there being but little demand for cider, growers send windfalls and low-class Apples in barrels to London, where they find a sale at some price for the 'smashers,' as low-class jam makers are styled in costermonger parlance; though, as a correspondent remarks, 'since the Adulteration Act there has not been such a demand for rubbish.' As many as 500 bushels per acre have been grown in plantations where the trees were in their prime. Taking an average of seven years of the average Apple-growing land in the county, the crop per acre per annum would be about 130 bushels. The average price per bushel home to the grower for Apples for the last ten years has been about 2s. 2½d.; the expenses for picking, packing, carriage, commission, and return of sieves, amounting to 1s. 4d., having been deducted. For the preceding ten years, the average price, clear of all these expenses, was about 1s. 10d. per bushel. The annual yield per acre of the orchards under Grass must be regarded as being 20 per cent. larger than that of the plantations in respect of Apples, but the average annual yield of both taken together amounts to about the quantity of bushels stated above. The fruit growers in Kent do not appear to have tried growing, upon a large scale, Apples and Pears on low bush trees, obtained by working upon the true Paradise stock, whose influence tends to dwarf the habit of growth, and to produce fruit abundantly. These bushes can be easily pruned and root pruned if thought desirable. There are several plantations of these in the neighbourhood of London, one notably at Chiswick, belonging to Mr. Dancer, who grows large quantities of the finest fruit upon this system, which, it is thought, might be adopted successfully by the large fruit growers in Kent."

In gathering Apples, baskets holding a bushel each are placed here and there about the orchard, and the pickers gather the fruit in smaller ones, which, when full, are emptied into the large ones. At the end of the day the baskets are carted to the packing shed, where the fruit is sorted into three sections, the largest, the medium sized, and small and bruised, the latter being picked out and placed in separate baskets. The small and inferior fruit is usually sent to market at once and sold for what it will fetch, but the best, if they will keep, are not disposed of until the best prices can be obtained for them.

MELONS.—Only in a few places near London are Melons grown to any extent. They are not considered a profitable crop, inasmuch as the demand for them is uncertain. Late Melons are the most profitable, as they come into use when other fruits are comparatively scarce, and the demand is then greater, and, moreover, they keep for some time. The chief supply, however, even of these, comes from country growers. A kind named Little Heath was some time ago grown to a large extent by its raiser, Mr. Monro, of Potter's Bar. Though not held in high estimation generally, Mr. Monro grew it to perfection. The plants were planted in a good fibrous loam mixed with a little decayed manure, underneath which are bottom-heat pipes. The plants are put out when about 8½ in. high, and the first fruits are usually ripe at the end of April. The first cut fruits of this kind realised 21s. each. The same fruits in other years realised in the market 30s. each; after these two other crops were obtained from the same plants. Many of the fruits on October 1 weighed upwards of 2 lb. each, and these were grown without the least fire-heat. Three crops of the Little Heath Melon were obtained from the same house in six months, and the fourth would be ripe in a few weeks afterwards. This sort justly claims the palm for early and quick ripening, certain fruiting, and prolificness, not only as a house Melon, but much more so as a frame variety. In one house sometimes might here be seen hanging upwards of 100 beautiful fruit at one time, each weighing from 3 lb. to 7 lb.; and three days before my visit there had been cut from this house sixteen ripe fruits for market, several others being ripe, the flavour of which was excellent. When this Melon is wanted about 4 lb. weight, and of first-rate flavour, the less heat and the less soil given it the better. Mr. Bennett, of Rabley, had one year the finest houses of Melons, perhaps, ever seen, several hundreds of fruit hanging at one time. They were even in size and excellent in every way, but many of them yielded but very little profit to the grower. The sort which Mr. Bennett grows is one of his own seedlings, which has been shown on several occasions at the Royal Horticultural Society's gardens, South Kensington, and been much admired. C. W. S.

NOTES FROM KEW.

Hardy Plants.—Few spring flowers exhibit more delicate beauty than the white-flowered variety of the Large-flowered *Sisyrinchium* (*S. grandiflorum*), the narrow, Grassy foliage of which considerably enhances the effect of the pure white, transparent, bell-like blossoms, which are suspended from slender stalks about 9 in. high. The original plant is one of the numerous discoveries made by Douglas, who found it on low hills in Columbia growing in dry soil. In cultivation it thrives admirably in ordinary garden ground, in any position, but it seems to prefer a northern aspect. A more singular-looking plant than Bigelow's *Scoliopus* (*S. Bigelowi*) seldom comes under observation, and it specially commends itself to lovers of the curious amongst flowers. It belongs to the Trillium family, and has a pair of broad, ovate leaves, which are deep green, spotted with black, similar to those of *Orchis maculata*, and which lie on the surface of the soil. From between these leaves arise some half-dozen blossoms on slender stalks from 2 in. to 3 in. long, and 1 in. across, triangular in outline, with the three broadest divisions greenish, heavily pencilled with deep chocolate; the three outer segments are hair-like and curve inwards. It inhabits the vicinity of the Tamur Pass, not far from San Francisco, whence it was recently introduced, we believe, by Mr. Ware, of Tottenham. It thrives in a peaty soil, and, like the Trilliums, evidently prefers a shady situation. Though upwards of three centuries have elapsed since the Lion's-leaf (*Leontice Leontopetalum*) was first introduced, it is rarely met with except in botanical collections, but it is, nevertheless, an interesting plant, developing, as it does, a large, Cyclamen-like, depressed stem, with divided and very glaucous foliage, and producing a stout stem 1 ft. or 1½ ft. high, terminated by a cluster of yellow flowers, ½ in. across. It apparently requires to be grown in a hand-lift, in order to protect it from excessive moisture during winter, as it inhabits rather arid districts in the Levant; otherwise, it is perfectly hardy. The *Cortusa*-

leaved Crowfoot (*Ranunculus cortusifolius*) is a handsome plant from the Canary Islands. Its leaves much resemble those of some of the kinds of *Heuchera* in size and form; hence the origin of its synonym (*R. heucherifolius*). The flower stem, which rises $1\frac{1}{2}$ ft. high, bears numerous bright yellow blossoms from 2 in. to 3 in. in diameter; it is considered the finest of all the species, with the exception of the beautiful white-flowered *R. Lyalli*, which in New Zealand is very aptly called the Water Lily of the Shepherds, and which has been the desire of all hardy plant growers to possess. The Spring Adonis (*A. vernalis*) is another very showy member of the same family, growing about 1 ft. high, with finely-cut leaves and each stem terminated by a solitary, shallow, spreading blossom from 2 in. to 4 in. across, and of a bright yellow colour. It is a native of Southern Europe and Siberia.

Greenhouse Plants.—Acacias now form the leading feature in the Temperate House, the most desirable for general culture being Rice's Acacia (*A. Riceana*). This may be termed the Weeping Willow Acacia, as it is said to grow abundantly on the banks of the tributaries which flow into the Derwent in Tasmania. Its long, slender branches covered with golden blossoms hang from tall, whip-like stems in graceful profusion. *A. leprosa* is similar in habit, but the blossoms are much larger and of a primrose-yellow shade. *A. obliqua* is a neat-growing kind, which flowers abundantly in a small state; its leaves are small and oblique in outline, and the blossoms are deep orange. *A. pubescens* is a most profuse flowerer in a large state; its habit of growth is very rigid, but compact and desirable when grown in small pots. The Natal Squill (*Scilla natalensis*) is a handsome kind, with stems rising $1\frac{1}{2}$ ft. high, the upper half of which is covered with pale blue blossoms $\frac{3}{4}$ in. across. Two highly ornamental *Rhododendrons* are especially noteworthy, viz., *Countess of Haddington*, which forms a dense bush covered with large bluish-tinted, funnel-shaped blossoms, which have been in perfection for several weeks past; and *Princess Alexandra*, a kind which much resembles *R. jasminiflorum*.

Stove Plants.—*Cochlostema Jacobianum* is one of the grandest and most beautiful of stove plants. It is stemless, and forms a huge tuft of leaves, which are often a yard in length and 6 in. in width, from the axils of which are produced several long racemes, the stalks and bracts of which are of a purplish shade, while the flowers are 2 in. across, with the petals beautifully fringed and of a rich violet-blue colour. Though it flowers more freely during spring, it is more or less in flower during the greater part of the year. It is a member of the Spiderwort family, and is a native of Ecuador, whence it was introduced about ten years ago by M. Linden. *Hebeclinum atroburense* is a handsome Mexican Composite, much in the way of its better known congener, *H. ianthinum*; but the flower-stalks are covered with a dense, woolly substance of a deep, reddish-purple, thereby much enhancing the effect of the violet-blue clusters of blossoms. The showy kinds of *Amaryllis* or *Hippeastrum* are very conspicuous, notably *A. marginata*, a dwarf kind, bearing a large cluster of splendid blossoms, rich crimson, profusely streaked with a lighter shade. *H. vittatum* var. *solandreflorum*, a handsome variety, differs from the original in having long, tubular blossoms, which in form much resemble the flowers of *Solandra*, from which it takes its varietal name. *Arrhizoxylum formosum* is a splendid Brazilian Acanthad, with ovate, wrinkled leaves, from the axils of which the blossoms are produced on long, slender stalks; they are tubular, 1 in. across, and of a bright scarlet colour. A very useful plant for general culture is the Violet Scutellap (*Scutellaria violacea*), as it is of dwarf, compact habit, and bears dense racemes of violet and purple blossoms very freely. The variety *robusta* is, in its name implies, of a more robust growth, and on this account is even preferable to the type.

Orchids.—One of the finest of the very numerous kinds of Epidendrum is the two-horned kind (*E. bicornutum*) from Trinidad. Its blossoms, which measure 2 in. across, are of firm texture, pure white with a narrow lip copiously spotted with purple, with just a dash of yellow at the base. Luddemann's *Phalenopsis* (*P. Luddemanniana*) is no less handsome than its lovely congeners, on account of the peculiar markings of its blossoms, which are $1\frac{1}{2}$ in. in diameter, with the lip of a rich amethyst tint, the sepal being of the same colour, but paler and transversely marked with brownish bars. Its habit of growth and foliage strongly resemble *P. rosea*. The large-flowered *Phalenopsis* (*P. grandiflora*) is an extremely beautiful species with pure white blossoms 3 in. across, borne on long, slender, drooping stalks. It is a native of Java and Borneo. The fragrant *Pilumna* (*P. fragrans*), with large, white, golden-eyed blossoms borne from the base of the bulbs, is very attractive, in addition to its delicious odour. One of the most beautiful of Lady's-slippers is *Cypripedium niveum*, with elegantly mottled leaves, and flowers 2 in. across, pure waxy white, more or less spotted with violet. Such a charming kind as this needs only to be seen to be appreciated. It is a native of the Tambelan Islands.

W.

PLATE CLXXVI.

A GROUP OF HARDY AZALEAS.

Drawn by Mrs. DUFFIELD.

THESE beautiful hardy shrubs appear to be, as a rule, overlooked by planters now-a-days, for they are seldom seen in modern gardens; if, however, they are carefully arranged in groups or masses, they form, when in flower, in May and June, a truly gorgeous spectacle. Although commonly known in gardens as Azaleas, they are really *Rhododendrons*, the only true hardy Azalea being *A. procumbens* (*Loiseleuria procumbens*); in fact, I should imagine that formerly they were commonly known as *Rhododendrons*, as in a catalogue of the Fulham Nursery (Whitley & Osborn), dated 1840, they are not in any way coupled with the name of Azalea.

Most of them are of North American origin, but the common species, *A. pontica* (*Rhododendron flavum*), is a native of the Levant, Asiatic Turkey, &c. The average height of *A. pontica* is said to be from 4 ft. to 6 ft., and most of the others reach from 3 ft. to 5 ft. They thrive best in a peaty soil, under treatment somewhat similar to that which suits the ordinary *Rhododendrons*. They are propagated by layering the lower shoots during the spring or summer months, leaving them two years before removing them. The flowers figured in the plate were cut from our group of fine old specimens of these Azaleas, some of which measure over 7 ft. in height, and as much or more through. The age of these plants is difficult to ascertain. In a manuscript book of my late uncle's (Mr. William Osborn) I read as follows: "The Fulham Nursery is supposed to have been commenced by 'Gray' early in the eighteenth century. He received many American trees and shrubs from collectors and amateurs in America, and enriched his stock from the sale of Bishop Compton's trees. In 1740 he published a catalogue of his plants, which is said to have been written by Philip Miller. In the preface to Catesby's 'Hortus Europæus Americus,' dated 1767, it is said that 'Mr. Gray, at Fulham, has for many years made it his business to raise and cultivate the plants of America, from whence he has annually fresh supplies, in order to furnish the curious with what they want'; and that, 'through his industry and skill a greater variety of American forest trees and shrubs may be seen in his gardens than in any other place in England.'"

From this we may imagine that many of these old plants were introduced to the Nursery by Mr. Gray. It is, however, possible that they were brought here from Brompton by Messrs. Whitley, Brames, & Milne, when they took the Nursery, about the year 1810. I am informed by my foreman, Mr. Pitman, who has been here for fifty-six years, that most of them were here when he came, and that many of them were nearly as large as they are now.

The varieties are very numerous and include a number of Belgian hybrids. I may mention the following as being some of the best—*coccinea major*, the best of the old varieties; *Cymodoce* and *Souvenir de Mortier*, rich crimson; *pontica macrantha*, bright yellow; *Reine de l'Angleterre*, buff, shaded with red; *viscosifera*, white, tinged with yellow; *Beauté de Flandre*; *grandinosa*, bright red and orange; *Grétry*, bright vermilion and orange; *Triomphe de Roelz*, bright crimson and orange; *Minerva*, pale pink with a darker shade; *Mortier*, pink and orange; *elegantissima*, rather lighter than *Mortier*; *flamboyante*, nearly crimson; *Ne Plus Ultra*, the best Belgian hybrid; *Gloria Mundi*, intense orange; *Julius Caesar*, rich crimson; *cuprea eximia nova*, very pale pink; *Mortieriana*, in the way of *Mortier*, but darker; *Cramoisie flamboyante*, fine dark orange; *Mazarelli*, salmon and orange; *electa*, *gloriosa*, *variegata*, &c.

I am not positive as to the names of the varieties figured, but believe them to be *Ne Plus Ultra* (bright red and yellow), *cuprea eximia nova* (pale pink), *pontica macrantha* (yellow), and *pontica versicolor* (pink and yellow). A number of seedlings have been raised in England at different times, but they do not appear to have the substance of these or to be so decided in colour. Their petals, too, are less reflexed and more pointed. These Azaleas are very useful as forcing plants.

ROBERT OSBORN.

Fulham.

Myosotis dissitiflora.—Mr. Groom (p. 294) must be unfortunate as regards *Myosotis dissitiflora*, for at the present time I have many in full bloom, although the ground is covered with snow 1 in. in thickness. I find they grow with us equally well from cuttings or seed, provided the season suits, but I should think the safer course would be cuttings struck in a frame in heat.—E. P. LEGGE.

Silene var. Robin Hood.—This makes one of the prettiest and most lasting of bedding plants for the spring. It is very easy to raise from seed, very hardy, and, until the *Pelargoniums* come in, very gay though neat. As to its time of flowering, if sown in the beginning of October in the open air, next April there will be a mass of bloom.—E. P. LEGGE.

GARDENING FOR THE WEEK.

Stove.

The principal stock here should now be making vigorous growth. *Ixoras* will be forming their flower-heads, and will be much strengthened by a liberal use of manure water; these plants are much better assisted in this way than by employing the manure in a solid form incorporated with the soil, as in a liquid state it can be applied just at a time when it is most wanted.

Dipladenias should have their shoots regularly trained to the strings or wires that support them, otherwise they get into a confused mass, from which it is impossible to separate them without injury. Such as are intended ultimately to bloom on trellises should not be trained on these until the young growths show a sufficient quantity of flowers, as bending the shoots down, in all probability, will have the effect of stopping their further extension.

Bougainvilleas.—Specimens of these in pots intended for conservatory decoration, where they will necessarily be in a lower temperature than that of the stove in which growth has been made, require special treatment, in order to prepare them for this. *B. glabra* is by far the easiest managed and most useful for this kind of work. In order to bloom it well from the time when it is started into growth in winter or spring, the soil must never be allowed to approach a dry condition, such as would cause the leaves to flag, even in the least, for when that occurs the shoots generally make little further progress, in which case the quantity of flowers which they produce is very much less than where vigorous uninterrupted growth has been maintained. For a like purpose the young shoots should be kept temporarily tied up in an erect position until the full complement of bloom is visible. As soon as the bracts of the earliest have got to about three-fourths their full size, and begun to attain their colour, the plants should be moved from the stove into a cooler, but not a cold, house; a Vinery "at work," where more air is admitted than in the stove, will be found the most suitable place for them. Here the flowers will come on slowly, and will last, after getting their full size, six or eight weeks, and they will almost be as deeply coloured as those of *B. speciosa*. If, in place of being treated in the manner recommended, the plants be allowed to remain in the stove until the flowers are fully matured, and then moved into cooler quarters, it usually happens that they all fall in a very short time.

Gardenias.—Any plants that have been forced into bloom early, and that have now done flowering, should be freely cut back, well cleaned from insects, and returned to the stove. As soon as growth commences they should be moved into larger pots, or, if not required to be grown to a larger size, a portion of the old soil should be shaken out and the plants should be replaced in fresh material in the same pots which they previously occupied. The compact-growing, free-flowering *G. citrodora* is well deserving of cultivation; its beautifully-scented flowers are always acceptable, and its occupying so little room, compared with the stronger-growing *G. florida* and *G. Fortunei*, makes it more suitable for those whose accommodation is limited.

Allamandas.—Such of these as are grown on trellises in pots should not have the shoots trained until they show flower, but ought to be kept slightly supported in an erect position, as, if bent down, they keep on breaking out afresh. They will now bear continuously a stronger application of manure water than most plants; they should therefore not be stinted in this respect, as the stronger they get the greater profusion of flowers they will produce, assuming that last year's wood was thoroughly ripened.

Caladiums and Alcasias.—These will now be in active growth, and every encouragement should be given to free, vigorous development, not by an over-lengthening of the foot-stalks, but by an endeavour to impart all the strength and substance possible to the leaves, so that, if required, the plants will be able to do service for decorative purposes in a somewhat lower temperature than that of a stove later in the season. The condition to permit of this can only be secured by allowing the plants sufficient room, keeping them near the glass, and using no more shade than is necessary to prevent the foliage being discoloured.

Marantas.—Plants that were increased by division earlier in the season will now be forming root and leaf-growth freely. Encourage a stout, sturdy state of the leaves in preference to a soft, extended development, which renders the plants wholly unable to bear even for a short time a temperature lower than that of a stove.

Achimenes and Gloxinias.—The earliest started *Achimenes* will now have advanced considerably, and, whether grown in baskets or pots, give them all the light possible, so as to prevent the shoots being drawn up long and weak, for upon this depends their ability to bear an abundance of flowers. The latest started bulbs should, as soon as they are ready, be transferred to the pots or baskets in which

they are intended to bloom, and treated so as to make their growth slow and strong. *Gloxinias* now flowering may be assisted to produce a still longer succession of bloom by giving them manure water, provided the leaves are kept in a healthy, clean condition, free from insects. Large plants intended either for home decoration or exhibition should, if possible, be set on a shelf near the roof and be allowed to come on slowly, treatment that holds good with these plants for whatever purpose they are intended and at whatever time of the year they are required to flower. *Gloxinias* are so accommodating that they may be had in bloom for eight months out of the twelve; but to have the flowers with the strength and substance requisite to enable them to stand without flagging on the plants when subjected to a lower temperature than that in which they have been grown, or to make them equally of use for employing in combinations of cut flowers, it is necessary that they be grown slowly and under such conditions as are here described, which give them a sturdy character, very different from the weak flabby growth of both foliage and flowers too often met with.

Winter-flowering Stove Plants.—The stock of these, including *Euphorbias*, *Eranthemum pulchellum*, *Sericographis*, *Giesbreghtiana*, *Thysanctanthus*, *Plumbago rosea*, *Jacaran-das*, *Begonias*, and *Apheleandras*, must have every assistance given them, so as to obtain a stout, sturdy, short-jointed condition of the plants, giving them enough pot room to insure a plentiful supply of healthy roots, for on this depends their ability to bear the full amount of flowers of which they are capable more than upon shoot development, which, if at all of a lengthened, etiolated description, is wanting in bloom-producing properties.

Poinsettias.—Moderate sized heads of these plants on stout stems are the most generally useful. A good deal depends upon the character of the house which they are to occupy when in flower; if to do duty in a large structure intermixed with larger-sized plants, they require to be grown proportionately large; and when so managed on stems from 4 ft. to 4½ ft. high, strong and vigorous, they will produce immense heads, such as are unobtainable from dwarf plants. Where wanted, some of the old stock should at once be started in heat and moisture for this purpose, and if any small stools exist, they may be headed down to within a few inches of the surface and grown on with from one to three stems each. If liberally treated through the season they will make fine decorative objects.

Amarylises.—These most beautiful and easily-grown plants seem again beginning to receive that attention which they deserve. For conservatory decoration, when in bloom, where they can receive a few degrees more warmth than an ordinary greenhouse affords, they are invaluable; their distinct habit, and the endless variety in shades of colour that have resulted from crossing the best species, particularly adapt them for associating with the usual plants in bloom in such structures through the spring, but when so used it is necessary to bear in mind, as I have already stated, that they are not placed in too cool a position, as the deciduous section when in flower are at the same time making active leaf-growth, and if kept in too low a temperature this will naturally receive a check which is fatal to the increased size and strength which the plants should yearly attain, and upon which their ability to increase through the production of offsets depends. Whilst flowering see that they do not want for moisture, as active root growth is now also going on, and as soon as they have done blooming they should be at once placed in an intermediate temperature where they will get abundance of light, and air every day when the weather is at all favourable. They succeed best in good, strong, holding loam, well rammed into the pots at the time of shifting, and, as compared with most other plants, they require to be under-potted as to size, though restriction in this respect must not be carried too far in the case of large bulbs that have a disposition to produce offsets, but which, unfortunately, many of the finest seedlings are slow in doing. Of all the plants in cultivation I know none that are more suitable for amateurs to raise from seed, or to which more interest is attached, but where crossing is attempted none but the best broad-petalled flowers with well-defined colours should be selected to breed from, and the nearer the colour at the base of the segments approaches to white, not green, the better; this latter is of importance, as it adds so much to the improved appearance of the flowers. Seedlings are generally kept in the pans in which they have been sown, or to which they have been transferred, until they have attained considerable strength, as, if potted singly before the bulbs have got some size, with a proportionate amount of roots, they would only bear pots so small that the little soil which they hold would be continually liable to get dry through the growing season, a condition which should never be allowed to occur. One of the great advantages that *Amarylises* present to the cultivator is the little space which they occupy whilst making their growth, and during the time they are at rest they can be set where few other plants would do at all.

Panocratiums.—These should be grown wherever choice bouquet flowers are in demand. From their comparatively large growth they require more room than *Anaryllises*, but, like these, they are easily grown; in fact, their ability to exist under such indifferent treatment is usually the cause of their being so neglected as not to flower satisfactorily; but if, as soon as the blooming is over, instead of being placed in out-of-the-way corners, half smothered with plants of taller growth, they are set where they are exposed to full light, with little or no shade, it will have the effect of keeping their leaf-growth much more within bounds than when it is made under opposite conditions, and their flowering capabilities will be proportionately increased.

Celosia pyramidalis.—This is one of the most useful decorative plants that can be grown; its elegant, erect habit affords such a contrast to the generality of other plants, that it is never in the wrong place associated with anything else. If a little seed be now sown and treated in the way in which ordinary Cockscombs are found to succeed, the plants will do well; but, for the guidance of those who have not grown it, I may add that, like its near relative, the Cockscomb, it is very subject to the attacks of red spider, which, if allowed to become established, will ruin the appearance of the plants and correspondingly curtail the development of the flowers. A free use of the syringe on the undersides of the leaves is necessary in order to keep them clean.

Orchids.

Sophranitis, Masdevallias, and Dendrobies.—Sophronitis now gone out of flower that need fresh blocks should immediately be given these before they have commenced to grow. Any of the Masdevallias that are making growth must now be liberally supplied with root moisture, for there are few subjects that require so much; even the plants that are flowering want to be kept much wetter than most things. Dendrobiums in flower, such as *D. Wardianum*, *D. crassinode*, *D. nobile*, and others, will now maintain a gay appearance, especially if the pendulous habited kinds are, as they always should be, suspended where the pseudo-bulbs can assume their natural drooping position. When grown in pots, there is a necessity for tying the bulbs more or less erect, but nothing detracts more from the collective beauty of the flowers. All that are now making growth must be treated as to moisture both in the atmosphere and at the roots in a way conducive to shoot development; at the same time, having regard for those that are in flower, it is well to let the atmosphere be a little drier during the night than would be requisite if there were no bloom to care for. Still, these being naturally moisture-loving subjects, when in a growing state the air must never be allowed to get over dry. Plants in baskets, independent of the water which they receive from the syringe, should from time to time after they commence to grow be dipped in a pail, so as to insure the whole of the material in which the roots are placed getting moistened.

Cattleya Mossiae.—The almost innumerable forms of this showy *Cattleya* will now begin to push up their flowers, the time for the opening of which can be regulated according to the requirements of individual cases. Where many of these are grown, and it is deemed desirable to have the greater portion of them in flower at once, it will only be necessary to keep them at a medium uniform temperature, and supply water to the roots as they require it; but where it is thought preferable to have them last as great a length of time as possible, a portion of the plants, especially those that bloomed the latest last year, and that were the most backward in completing their growth, may be kept cool and dry. In this way they will bear the temperature of an ordinary warm greenhouse, viz., about 45° at night, removing them from where air is admitted. Thus treated, the flowers may be delayed until the middle or end of June without any perceptible injury being done to the plants.

Cattleya Trianae.—When this has done blooming it will at once show a disposition to make growth, which should be encouraged. This section with many growers does not maintain the robust, healthy character common to other species, in many cases, after a few years' cultivation, dying off weakly, but I have noticed that when grown in baskets or pots and suspended near the glass roof, they rarely show any decline in healthy vigour; yet it is evident that they are much weaker in constitution than the rest of the genus, and where subjected to over-heated and too moist treatment they gradually get into a weakened condition that soon ends in death.

Cattleya labiata.—This grand old autumn-blooming kind will now commence to grow, but, like the others to which it is allied, it cannot bear too much water at the roots, and it frequently happens that through well-meant attention over-much moisture is given early in the season, and which I have found most disastrous in its effects. If the soil for this and other species now in the early stages of growth be kept just a little moist it will be sufficient.

Cattleya marginata.—The small-growing forms of this plant are generally found to succeed much the best on blocks associated

with Sphagnum. They will now begin to grow, and where any additional Moss is required it should be at once provided, as if there be not sufficient of this it necessitates a too frequent application of the syringe.

Cattleya intermedia.—The different handsome summer-flowering forms of this, though the blooms are not nearly so effective individually as some others, from the delicate tints of their long-enduring flowers are well deserving of cultivation. The variety known as *C. amethystina* is amongst the best, producing, as it does, when strong, six or seven flowers from a pseudo-bulb. It blooms in different ways, sometimes from the growths as they are just about being completed, but more generally and satisfactorily from the bulbs matured late the preceding autumn. I have found the young advancing flowers very liable to get injured by the scape becoming decayed and getting into a damp, wet condition; the same often occurs with *Cattleya Skinneri*. Care should therefore be taken that no water through drip or any other cause reaches the flower-stem until it is sufficiently advanced to be out of danger. The bloom of these will now be on the move, and the time of flowering, like the previously-mentioned *C. Mossiae*, can be regulated as required by similar treatment, but *C. Skinneri* must not be submitted to so low a temperature as the others, as it is not able to bear it.

Temperature.—This, in the various houses, including that occupied by the hottest species, must now be increased as required by the advancing season, and the time for active growth being at hand, root, as well as atmospheric moisture, must be increased, but on no account let there be any excess of the latter, especially during the night time. Its presence in too great quantity is, undoubtedly, one of the causes that has tended to destroy vast numbers of these costly plants.—T. BAINES.

Flower Garden.

Auriculas.—The named varieties belonging to the florist section are now in full bloom, and this must be preserved for as long a period as possible. The advantage of a house to show off the plants has been well proved this week; for several successive days it has been impossible to remove the lights from the frames, even for a few minutes to water the plants; it has been snowing nearly all day, and, as I write, the cutting east wind, with blinding snow, is disastrous. As regards its effects, the largest portion of our plants are in a house where they can be enjoyed more, because of the rough weather outside. Thin out all badly-marked or badly-shaped pips; also thin the flowers of all trusses that have too many pips. Small offsets potted last autumn or early this year must now be potted off, placing the plants in a frame behind a north wall; give them plenty of air, removing the lights altogether in fine weather. See that plants of Alpines in beds are attended to, the beds kept clear of weeds, and the surface soil stirred if necessary.

Carnations and Picotees.—Such weather as we are now experiencing is very trying to the newly-potted plants in the open ground, and those who can place their plants under glass have a decided advantage. Ours are in frames, where they seem to do well. Wireworm has been troublesome this year; they eat into the centre of the stem, then work upward or down to the base of the stem. The plants attacked are speedily destroyed, and the pest is seldom seen until the mischief is done. If any trace of green fly is to be seen, fumigate so as to destroy it. It has been necessary to go over our whole collection in order to pick out weeds and stir the surface of the soil in the pots.

Dahlias.—These must not be too severely exposed to the weather as yet. If the plants are in cold frames it will now answer to expose them to the frost at night with only the glass between them and the open air. Place mats over the frames at night. Remove any plants that are established into the frames, but they must not be placed in frames from a warm forcing house all at once. The plants require plenty of air, when the weather is fine removing the lights altogether. If the best results are to be obtained sufficient space must be allowed between the plants to allow of the free development of the leaves.

Gladioli.—Still continue to plant out a few of these on favourable occasions. If possible the ground should be dry, and it is desirable that it should be well pulverised by turning the surface over when it is in a dry state. Seeds may still be sown, but to ensure the flowering of the plants next year they must be sown on a hotbed. The seeds will germinate in a fortnight, after which air may be more freely admitted to them. By-and-by when the weather is fine they may be fully exposed with the lights off. Freely supply the pots with water when the seedlings are in full growth. Run the hoe through amongst the plants that have appeared above ground. The rough, dry surface is a slight protection from frost, but when the collection is but small it is easy to invert a flower pot over each plant at night, removing it in the morning.

Phloxes and, indeed, all similar herbaceous plants grown to flower in pots may now be placed in a favourable position out-of-doors. What the largest proportion of these require are generous supplies of water at the roots and rich potting material for them to work into, and do not allow the plants to be root-bound in the small pots in which they were wintered. Place sticks to the young growths, as they easily snap off at the surface of the soil.

Polyanthuses.—These are now in full beauty and are very much admired. This is a free, fast-rooting plant, and, therefore, requires considerable supplies of water at the roots; the frames in which the plants are growing should face the north, but even here it is necessary to shade. Seedlings raised from seeds sown as soon as they were ripe last year should now be planted out in a bed of rich soil behind a wall or a hedge.

Pansies and other small-growing plants of that kind in frames require attention as regards keeping the leaves free from insect pests. A close atmosphere is conducive to the spread of insect pests. All such plants continue in the most healthy condition when air can be freely administered. Should the flowers be required for any particular occasion, it is best to pick all the open blooms from the plants two weeks previous to that date.—J. DOUGLAS.

Indoor Fruit Department.

Vines.—In some instances early Grapes will now be colouring, a critical stage in the case of Vines that have in previous years been cropped too heavily, or that have not had a sufficiency of water during the present season, conditions either of which tends to the production of shanked berries. If there is any apprehension on this score it will be well to apply the remedy even before the disease shows itself, and that is to water liberally with tepid water, and mulch immediately afterwards with litter or old mushroom-bed manure, in order to retain the moisture and prevent the necessity of watering again till the fruit is out, and should there be any misgivings as to the crop being too heavy it will be better to cut off a dozen bunches at once than run the risk of three times that number shanking. Good colour and finish can only be attained by free and regular ventilation. Cold currents of air must be avoided, but a gentle circulation of rarified air is now a necessity night and day. This, of course, implies firing, but that must only be done to a reasonable extent, for the bloom will be denser if the maximum temperature does not exceed 65°. The air moisture should be lessened, but not entirely withdrawn, or red spider will soon get the mastery, if, as is probable, considering the season, it has at all established itself. Pot Vines require the self-same treatment, with the addition of more frequent waterings. Late Vineries will now require a large amount of attention in the way of tying down, stopping, and regulating the shoots, and the atmosphere cannot well be too humid, or the house be shut up with too much sun-heat from the present time till the flowers open, when a more buoyant and drier atmosphere should be maintained. Do not stop the shoots according to the orthodox fashion, viz., at one joint beyond the bunch, but according to the trellis space there may be naked, all of which should be covered, but not crowded. I have known Vines that have become decrepid, and condemned wholly resuscitated by the adoption of this rational mode of treatment, viz., allowing the lateral growths to extend in every direction so long as they could be exposed to light. Any Vines yet to be planted should have early attention, for, though they thrive when planted at any season, April may be considered the best time for planting them. As to the manner of planting see THE GARDEN (p. 224).

Pines.—The continuance of sunless weather which we have experienced has had a deteriorating effect on even the most stocky Pines, for it has been necessary to employ so much firing that the foliage has become drawn and the finest "shows" are not even equal to average ones of last year; now, however, that better weather has set in, much may be done to neutralise this evil by giving air freely during the early part of the day and closing up early with abundance of moisture, and allowing the temperature to run up for an hour or two, with sun heat, to 90° or 95°. Of course, this treatment only applies to fruits that are swelling; any that are ripening should, when practicable, be put in a compartment by themselves, as these require more air and a drier atmosphere. Suckers that were potted a couple of months ago ought now to have filled their pots with roots, and should therefore be shifted into larger pots and placed in a bottom-heat of 85°. Keep them in a close, moist atmosphere till the roots have struck into the new soil, when ventilation may be allowed as before.

Strawberries.—Incassant attention as to watering is now what Strawberryers chiefly require; under no circumstances should they be allowed to flag from want of water. As a general rule, the first blossoms produce the finest fruit, and, as soon as eight or ten of these have set on each plant, all others should be picked off, and every alternate day the plants should be watered with clear manure water.

Syringe overhead on fine sunny days when closing up, and discontinue the same as soon as indications of ripeness are perceived. Should the supply of plants for indoor forcing be likely to come to an end ere the outdoor Strawberry season arrives, it will be found to be a good plan, in order to eke out the supply of fruit, to at once place over established open-air plantations ordinary cold frames; the plants thus covered, if well attended to as regards syringing, watering, and giving air, will be quite a month in advance of the ordinary supply. The varieties La Grosse Sucrée and President are both capital sorts for this kind of semi-forcing.

Figs.—Those in pots approaching maturity should receive a final dose of manure-water, and, if the pots admit of it, they should be mulched with droppings directly afterwards, as frequent waterings are now undesirable, though anything like a dry state is to be deprecated. Daily waterings now would be the forerunner of insipid fruit; therefore, the best plan is to water at long intervals and mulch in order to retain the moisture communicated as long as possible. Give air freely, but avoid aridity and cold draughts. Trees that are planted out in inside borders with limited root run cannot have too generous treatment; always water with tepid guano-water, and syringe overhead twice daily. Pinch out the points of the side shoots at every second or third joint, and the terminal shoots should also be stopped if likely to overshadow other shoots or fruit. Figs are as susceptible as most other fruits to injury from over-cropping, and any extra fruit taken as a first crop will tell against the second; it will be well, therefore, to be content with a moderate first supply, and remove the redundant fruit forthwith.

Peaches and Nectarines.—Early Beatrixe and Early Louise, the two best early kinds of Mr. Rivers' seedlings, are now swelling rapidly, and though neither of them can in all respects be placed in the first rank, they are most valuable for early "work," and a tree of each should have a place in all moderate-sized Peach houses. We have gathered ripe fruit of Early Louise five weeks in advance of that of Royal George in the same house, a fact which will show how valuable these early kinds are. Well ply the syringe and husband sunheat by closing up early, and above all, see that inside borders have no lack of water, and are kept covered with stable litter, which helps to keep up the desirable humidity. Partially disbud late houses as soon as the fruit is set, and finally disbud when the fruit has attained the size of large Peas, removing all surplus fruit at the same time. The points of the side shoots should be stopped at the first leaf, and the main terminal ones trained to furnish the trellis, which should, however, not be crowded with useless wood. The latter will not only have to be cut out at the winter pruning, but it will also prevent the ripening of the next season's fruit-bearing shoots. Young, vigorous-growing trees should receive clear water only, but abundance of it should be given, and any strong-growing shoots may be repressed by occasionally pinching out their points, or bending them downwards, in order to check the current of sap. Shoots of medium strength—small rather than large—ripen the best, and, as a matter of course, are most fruitful. As soon as green or black fly is observed, in however small numbers, fumigate with Tobacco paper for two or three nights successively, care being taken to have both the foliage and the atmosphere dry before performing the operation.

Melons.—Early fruits will by this time require support, and we have yet found nothing better for this purpose than a piece of ordinary fish netting tied at four points to the trellis with string; when thus tied, a piece 6 in. square will support the largest fruit. If water be requisite it should be given copiously now, for by-and-by, when the fruit is fully grown, it will be dangerous thus to apply it for fear of causing the fruit to crack. Keep up a good supply of atmospheric moisture as a preventive of spider, and if it should appear, sponge at once the foliage with soapy water. In compartments where the plants are flowering, take pains to fertilise them, and if about four on each plant can be operated on at the same time, they will be more likely to swell equally. The air moisture should lean to the dry side till a full crop has set, when an increase may take place; air may then be given freely in the early part of the day, and growth encouraged through forcing by means of sun-heat in the after part. If the beds for succession plants are not ready, pot on the plants, as the roots should never be allowed to feel the sides of the pots, such a check causing them to fruit prematurely and before the plants are strong enough to perfect a crop.—W. W.

Kitchen Garden.

Beds or plots of Asparagus should now have a dressing of soot, salt, or wood-ashes, which will both fertilise the soil and keep off slugs from the young shoots now emerging from the soil. New plots may now be planted in rows 3 ft. apart and 2 ft. plant from plant in the row. The old system of forming beds and covering them up annually with fresh soil should be allowed to become obsolete. If grown on the flat system and in regular lines, and the soil be kept

stirred during the growing season, and surface dressed in winter, with either a little fresh soil, rotten manure, salt, or burnt ashes from the refuse heap, the best of Asparagus will be the result. Judging from plantations in the neighbourhood of Paris, plenty of space between the rows seems to be the aim of French growers, and apparently the reason why they excel us in the culture of this esculent. Seeds of it may also be sown for transplantation next year. Seakale, Rhubarb, and Horseradish that have yet to be planted cannot longer be delayed if they are to be satisfactory in growth and produce; and the same remark applies to Potatoes, all of which ought now to be in the ground; earth up early border kinds, and keep litter or Bracken at hand for covering when frost seems imminent. Thin out, earth up, and stake advancing crops of Peas. Notwithstanding the severe winter, birds are still sufficiently numerous to seriously injure these by eating out the points; therefore, we have still to use the gun in self defence. Thin out Parsnips to 8 in. apart as soon as the seedlings can be handled; stir the soil between the rows when dry, and also between all other growing crops, such as Parsley, Cabbage, Lettuce, and winter Onions. A general sowing of Kales, Broccoli, and Savoys may now be made; also a last sowing of Autumn Giant Cauliflower. The usual routine work will now consist of making frequent and regular sowings of summer vegetables and salads, such as Lettuces, small Salads, Radishes, Spinach, Turnips, Peas, and French Beans. Keep walks, alleys, and edgings neat and trim, and the ground between all crops well stirred both for the destruction of weeds and for the advancement of growth.—V. W.

AMERICAN NOTES.

Big Trees.—Prof. Brewer corrects the common error as to the height and age of the big trees of California and Australia. Although the Eucalyptus of Australia measured more in height, the Sequoias of California, taken as a whole, are larger in size. The State Geological Survey carefully measured the trees in the different groves, including several hundred in all, and found only four that were over 300 ft., the tallest being 325 ft. Only a small portion of the whole exceeded 230 ft. As to the age of these trees, Prof. Brewer says that only one was accurately counted to the centre, and that this was only a few hundred years old. He admits, however, that some may be 2000. The estimate that the age of the oldest extended back to the time of King David and the Trojan war was made by counting the thin outer annual layers of old hollow trees, and erroneously supposing the interior ones to be as thin during the young and vigorous period of the growth of the tree.

Carnivorous Plants.—Some discussion has recently taken place as to the influence on growth of the insects caught by carnivorous plants. Mr. Peter Henderson, as reported some months ago, tried the experiment on a hundred plants of Venus' Fly Trap. There was no difference whatever in the growth of those which had free access to insects and those from which they were entirely excluded. The experiment had been previously tried under Darwin's direction where a number of *Drosera rotundifolia* were fed with meat and made an increased growth. This result is not at all surprising when it is remembered that putrid meat is one of the most powerful animal fertilisers, and it seems surprising that the fact should have been overlooked that a highly-manured plant will always grow more rapidly than one without it. We have known some instances where special fertilisers applied directly to the leaves of plants had produced similar results. The insects caught by the plants alluded to seem not to have possessed much value as manure.—"Country Gentleman."

Ice Storing.—It does not matter in the least whether Mr. Williams' column of straw up the centre of his ice-heap be thick or thin. It is unnecessary and wrong in principle, for the reasons I have given, and which he does not now venture to dispute. (See p. 232.) That, of course, the salt water frozen on the top almost immediately congealed, he meant during frosty weather. We are to understand from this that he does not consider the ice-heap in an ice-house to be at or below the freezing point under the surface as long as it lasts? A bottle of water buried in the ice at midsummer freezes quicker just the same as it would do in winter; and it follows, therefore, that drainage from the top, if any, would freeze in passing through the heap. If this were not so—if the ice in the body of the stack were not in a freezing state, it must be thawing—there can be no medium state, and it follows, as a matter of course, that every fragment of ice of which the heap is composed is surrounded by a temperature above 32°; and if this were the case, why the heap, instead of lasting one or two years, would not last above one or two weeks, but would perish immediately. Did your correspondent never see an ice-house frozen in a block of ice in July? Mr. Williams asks: "Where is the heat to come from in a vault wholly underground" to render his central column of straw "a channel for heat?" a query which carries its own refutation. If there be no heat to penetrate the straw communication in connection with the air at the top to the ground of the bottom, where can the heat come from when there is no straw shaft at all? and if there be no heat, how can the ice melt internally? and if it does not melt, what is the use of the central drain?—C. [Here we think this discussion is old stop.]

A COUNTRY VICARAGE GARDEN.

MANY an exquisite bit of tree or shrub scenery may often be found in gardens attached to country vicarages. Away from the busy hum of towns, miles perhaps from a railway station, one often meets with gardens abounding in nooks and corners, full of the choicest kinds of hardy plants, shrubs, and trees, with just enough glass to prove the truth of Cowper's lines, "Who loves a garden loves a greenhouse too," and just enough bedding out to show that it is possible to graft the new on the old—to introduce modern ideas without discarding all one's old-cherished favourites. Undoubtedly interesting are some of these old-manse gardens; but the dignitaries of the Church in all ages have always been staunch supporters of gardening in its truest and best form. Just such an ideal place I found the other day in the rectory garden at Warboys, Hunts, the residence of Canon Hill. Many years ago, the place must have been planted and laid out by someone possessing the eye and feeling of an artist. A small stream had been coaxed from the fields near, and widened out into a miniature lake, with its island and serpentine banks so clothed and garnished with tree and shrub growth as to throw some parts into deep shadow, which seemed to enhance the brilliancy of the open stretches, and at the same time left a pleasing doubt in the mind as to its real extent. The place altogether did not consist of more than 3 acres, but the trees and shrubs were so happily grouped and blended, the grassy glades, and the open stretches of sparkling, glimmering water seemed dropping into the view just where the eye sought some relief, producing a complete and most charming picture. Another feature was an old-fashioned terraced garden on gravel, with narrow, box-lined beds, the whole surrounded by a dwarf wall, on the reverse side of which was trained new varieties of Roses, and at its base was a long border for herbaceous plants, with groups of Lilies, Roses, and other interesting hardy plants that are not near so common now as they deserve to be. A neat little span-roofed forcing house has just been built on the site of an old-fashioned lean-to pit, the glazing being done without a particle of that greatest of all nuisances in hothouse building, putty; and the future cost of painting, which in glass structures of the ordinary type is usually so heavy an item, will be thereby much reduced. I have often noticed how the leading garden in the district gives a tone to the gardens of less extent and degree around it. When visiting Belvoir some years ago, long before I reached the castle gardens, I could see their beneficial influence in the glowing masses of spring flowers in the cottage and other gardens in the neighbourhood. So it was here at Warboys on a lesser scale. The shrubs and trees of the rectory garden seemed to have overflowed in more than one direction, and I noted, during my short visit, several examples where more than average taste had been employed in their arrangement. But little illustration is needed to show that example is better than precept.—E. H., in "Field."

GARDENERS' FRIENDS.

DEVIL'S COACH-HORSE, OR FOETID ROVE BEETLE.

(OCYPTUS OLEUS.)

THIS very common and well-known beetle is not generally considered by gardeners to be an insect in any way likely to be of any service to them, and they more frequently imagine that it is destructive to vegetation; in this, however, they are very much mistaken, as these beetles feed entirely on animal food, and the number of small insects which are destroyed by them is very considerable. On no account should any of these beetles or any members of the same family be purposely destroyed, as none of them are injurious to plants. The devil's coach-horse may often be found under stones or boards which have laid some time on the ground without being moved, or running across garden paths. When disturbed, or at the approach of any danger, they turn up the ends of their bodies over their backs, and, opening their large jaws, put themselves in a very ferocious attitude, as if prepared to do battle with any comer; they look as if they would bite any one who touched them, but they are perfectly harmless, and may be handled with impunity. They belong to the family of beetles called Staphylinidae, a family which in this country is considerably larger than any other with which we are acquainted, and which contains more than 750 British species.

TREES, SHRUBS, AND WOODLANDS.

BARK AND BARK STRIPPING.

THE period of bark stripping and harvesting is one of the most anxious seasons of the year with the forester, as the quality of the bark is so largely dependent upon the weather during the time which intervenes between the stripping and the delivery, as well as upon the carrying out of the work at the proper time, to secure easy and expeditious peeling. In most cases, the time when the bud is just expanding into the leaf is that which gives the greatest weight of bark of the best quality, and with the smallest amount of labour. By deferring the work even for a few days there is often a loss in weight, amounting to as much as 10 per cent., and a great deterioration in quality.

Even in the most favoured situations it is but seldom that the season for stripping extends beyond from twenty-five to twenty-eight days. In this district (Kent) it often reaches from about the 20th of April to the 20th of May in an early spring, and from about the 1st day of May to the end of the month in a late one. Much depends upon latitude and the exposure of the situation, and farther north it is often from about the middle of May to the middle of June. The healthiest trees in the most sheltered situations break out earliest, and generally strip easily and yield good bark, while those of unkindly growth or in exposed situations linger in the bud, strip with difficulty, and yield bark deficient in tannin. Wherever hammering has to be resorted to, the cured bark is generally deficient in that bright inside creamy colour which denotes abundance of tannin matter. Such bark is also much more liable to deteriorate upon the drying stage during a wet season.

Trees growing in sheltered hollows having a southern aspect yield the best bark. Under twenty years old the trees have not arrived at perfection for stripping, and after thirty years the yield both of tannin matter and extractive diminishes. The astringent property upon which the value of bark so much depends is most abundant in trees of middle age.

A calculation of the quantity of bark to be stripped may be made from the following data: A flourishing, well-proportioned, and full-grown tree will produce from 5 to 6 cwt. of bark for every ton of measurable timber it contains. Trees of medium age, averaging 10 ft. each, will produce a ton of well-cured bark for every 150 ft. of timber; hedgerow trees in favourable situations about a ton of bark to 3 tons of timber. The yield from plantations or coppice Oak will be proportionate to the space afforded to the growing timber. Where this is ample we may estimate a ton of bark for every 4 or $4\frac{1}{2}$ tons of timber. Small Oak poles will not average more than 1 ton of bark from 5 tons. All branches of 1 in. in diameter should be peeled, as these contain in proportion more tanning matter than the trunk bark.

The number of hands required to strip and stack a given quantity of bark in a stated time will depend upon the size of the timber as well as other circumstances. As a general rule, the larger the trees the fewer the hands. Taking the average of several years, I have found that about six or seven men, with two strong boys, will fell the trees and strip and stack 1 ton of bark in the day. The price paid per ton has for some years been £1 12s.

Before felling a tree, care should be taken to ascertain if both the body bark and that of the branches will run easily. An experienced eye will generally tell this at a glance. The necessary tools for felling and cutting up are the heavy and light axes and the handbill. For peeling the peeling-iron and the wooden mallet, made of Ash, about 4 in. square at the head and 7 in. long, with a wooden handle. This will sometimes be found necessary for loosening refractory bark, but the less it is used the better the quality of the bark.

Various methods of stacking bark are adopted in different places. One of the most common consists in placing it upon a raised stage formed of strong forked sticks driven firmly into the ground, and upon which are placed longitudinally other peeled rods, so as to form a secure platform; upon this is placed the smaller shreds of bark, the whole being securely thatched or covered in with lengths of the body bark, averaging from 3 ft. to 3 ft. 6 in. If the bark be well stacked, no turning will be necessary in an average season, when it is fit for delivery in about a fortnight; but should a long spell of wet weather follow, choose a fine day and open and re-arrange the stack. When the bark will snap between the fingers or under pressure and not bend, it may be considered fit for delivery.

During the process of curing, the inner side of the bark should never be exposed to the sun or rain. The stage should be raised sufficiently high to admit a free current of air under the bark; about 2 ft. will be sufficient for this purpose. Bark generally loses about one-third of its weight in drying if properly harvested. A dull inside colour indicates bad curing or the presence of but little tanning matter; this matter, which gives its value to bark, is found

The Staphylinidæ vary very much in size; a few species are somewhat larger than that which forms the subject of this paper, and some are hardly one-tenth of an inch long. They nearly all closely resemble one another in form, being very long and narrow, with shortish legs and very short wing-cases. They are generally black or very dark brown; some, however, are more gaily coloured. Most of them fly well, and all can run very fast. They feed entirely on animal or decayed vegetable matter. The devil's coach-horse leaves the chrysalis case towards the end of May. The female lays her eggs, which are oval in shape and unusually large (in fact they are larger than those of any other English insect), measuring about one-tenth of an inch in length, in the course of the summer. The grubs or other larvæ, for they cannot be called grubs like the larvæ of most beetles, very much resemble the parent insects, except that they have no wings or wing-cases, and are brownish-grey in colour. They run with great activity, and are very bold and voracious; they will even attack and devour their own species, and, like the perfect insects, live entirely on animal food; they may often be found under stones, clods of earth, boards, or anything, in fact, which will afford them shelter. According to Dr. Heer, they often construct cells in the earth, about 1 ft. deep, in which they take up their abode, seizing any unfortunate insect which may happen to fall into or cross it. The larva remains as such during the winter and early spring, and in May assumes the pupa or chrysalis state, which change it undergoes beneath the surface of the earth; about a fortnight afterwards it leaves the chrysalis-case as a perfect insect. It is now entirely black in colour, and rather more than 1 in. in length; the head is roundish and rather wider than the thorax, the jaws are long and powerful, the antennæ consist of eleven



Rove Beetle.

joints, which, with the exception of the basal ones, which are rather longer, are much of the same size; the thorax is rounded and narrower than either the head or wing-cases; the latter are very short, and cover a pair of long, well-formed wings, which, when not in use, are carefully folded beneath them; the insect uses the end of its body, which it turns over its back to assist in the operation of folding up its wings. The body is somewhat flattened; the six last joints are not covered by the wing-cases, and are hard, scaly, and well-defined. The extreme end of the body is furnished with two small organs, from which the insect can emit a most unpleasant smell, and which it doubtless employs as a means of defence. Several nearly allied species have the same means of defence. The larvæ are somewhat smaller than the perfect insect, measuring about 1 in. in length; their antennæ are very short; the first three joints of the body are the only ones which bear legs; these joints, with the fourth, are hard and horny; the remaining nine joints are soft, rounded, and fringed with hairs at the sides; the end of the body is furnished with two long, feeler-like organs; the last joint is merely a conical tube, which is used as a seventh leg. The pupa or chrysalis is not a hard case like that of a butterfly, but the insect is enclosed in a skin, through which the immature limbs can be seen folded over and the head bent upon the breast.

S. G. S.

Shaw's Patent Mineral Solution Tiffany.—A customer of ours has written as follows respecting this tiffany:—The poisonous nature of the solution which lies about the plants in the shape of powder has burnt the leaves of 700 plants, and has injured my Grapes, so that we have been obliged to remove it from the house as useless in its present state. The plants were in splendid condition before erecting the tiffany. Where a small portion of the house had no tiffany over the plants they are all right, thus clearly proving that the fault rests with the tiffany. Should not this kind of tiffany be used outside the glass and not inside? We have advised our correspondent to remove the tiffany to the outside, and give the plants a syringing with tepid water in order to remove the poisonous nature of the solution. What is the experience of your readers with reference to this tiffany?—LAMOTHEUX & Co., Plymouth.

mainly in the white cortical layers, which are situated next the alburnum or sapwood of a tree.

In felling trees of an age to leave reproductive stools, great care should be taken not to strip off the bark down to the roots, as is often carelessly done, as this destroys the continuity of the dormant buds. While smaller poles may be advantageously cut down with the axe, all trees having a diameter above 6 in. to 8 in. are better felled by the aid of the cross-cut saw; this will be found to be economy both of time and timber.

In delivering bark, it is customary to tie it up in bundles with withes for the convenience of loading. Formerly it was chopped in small pieces and afterwards delivered in bags. The cost of tying up is about 1s. 6d per ton. Chopping costs 6s. or 7s. per ton.

As soon as the stripping and stacking are finished, no time should be lost in cutting up the cord-wood and faggots, and getting the whole of the produce removed from the fall. As the speedy curing of the bark depends so much upon the airiness of the situation in which it is staged, it is scarcely necessary to remark that, for this purpose, an open spot should be chosen, well removed from the shade and drip of trees, and where both sun and wind have free access.

A. J. BURROWS.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS.

The Red Maple (*Acer rubrum*).—Why is not this beautiful deciduous tree more extensively planted? For some time past specimens in the Kew arboretum have been most conspicuous on account of their innumerable clusters of small red flowers. As an ornamental tree at all seasons few equal this in beauty; in spring its foliage renders it especially striking, in summer its compact growth and fine flowers make it a very effective shade tree, whilst in autumn the brilliant golden-yellow of its decaying leaves attracts the attention of even the most casual observer. It is not such a rapid grower as the Silver-leaf Maple (*Acer dasycarpum*), but is neater in habit and much more handsome during early spring, its blossoms being deeper in colour by a shade or two and lasting for a longer time.—G.

Cassandra calyculata.—This pretty little undershrub is now (and has been for some time) in blossom. It forms a dense bush about 18 in. high, has small, leathery, box-like leaves, and produces its pleasing, urn-shaped white blossoms in great abundance from the axils of leaf-like bracts at the tips of the branches. It succeeds well in moist, peaty soil, is perfectly hardy, and is a native of the northern parts of Asia and North America.—G.

Lonicera Standishi.—The creamy-white, deliciously-fragrant blossoms of this Chinese Honeysuckle, and its flowering so early, render it a decided acquisition to any garden. Although not strictly a climbing kind, it makes an acceptable wall plant, and it is well worth while to accord it such shelter, as the flowers are produced under those conditions much more freely than from plants in the open border. It is a deciduous, twiggly shrub, with pale yellow-brown branches, the blossoms being developed much in advance of the leaves. To Mr. Fortune is due the credit of its introduction to this country; he found it generally cultivated at Shanghai, and sent plants from thence to the Royal Horticultural Society, by whom it was distributed along with *L. fragrantissima*, from which, however, it is quite distinct.—G.

Transplanting Trees in Winter.—It is unquestionably better to transplant trees when small from the nursery rows either in spring or autumn, but it is sometimes desirable to move large ornamental or fruit trees from the forest or pasture, or from their place in the orchard or lawn where they have been planted too close. This is best done in the winter, and by the frozen-bank method. Dig a trench around the tree, making the ball of earth 6 ft. or more in diameter, according to the size of the tree. For a tree 6 in. or 8 in. through at the butt the trench need not be more than 2 ft. deep, and may be dug at any time late in the autumn, or during a thaw in winter. The places to receive the trees are to be prepared beforehand, and furnished with rich loam. When the ground is frozen 12 in. or 18 in. the block of earth can be prised out with levers, put upon a truck, and removed to its new home. A rock-lifter or stump-puller is a much more convenient machine to do the lifting and transplanting. If the work be carefully done there is no risk at all in the removal; the roots are not exposed, and frequently the tree, the next year after transplanting, will make the average growth of wood. This method is particularly desirable in removing evergreens that have been too closely planted and begin to crowd one another. Valuable trees, six or eight years old, may thus be saved that must otherwise be sacrificed. We have frequently moved large seedling Pears from old pastures by this means, put on new tops, and in three or four years had them loaded with the finest varieties of fruit. In preparing borders for the transplanting of large fruit trees

they should be made extra large, and should be well supplied with rich compost and a barrel or more of bones to each tree.—“American Agriculturist.”

THE FRUIT GARDEN.

NEW PLAN OF FILLING A HOUSE WITH VINES.

I CALL the plan which I am about to recommend “new,” because, so far as I am aware, it has not been recommended before in any work upon the Vine nor practiced. As is well known, the usual way with young Vines is to train up one or more rods to the top of the rafter, if they will grow that length, and to cut them down again to the bottom wire at pruning time, and, during the next few years to leave a few feet of wood every season till the Vinery is completely furnished with bearing rods—a practice which requires from five to six years, according to the size of the Vinery. The plan which I propose, however, and which, I hope your readers will try and record the result, is to grow good strong canes to the top of the rafters the first year and not to cut them down at all, but leave them entire. They need not be cropped at all, or, at least heavily, the first season after planting, but they will assuredly carry a good crop the next, and should afterwards go on bearing in the usual way, thus giving the grower several years’ advantage in starting over the old plan of gradual extension. I am induced to think this plan will succeed, from my experience with some supernumerary Vines here, which were left their full length the first season and cropped the second. These Vines, owing to circumstances which need not be specified, have, most of them, been left, and have been fruited every year since 1871, and they have always carried good crops of late Grapes, and have never produced a shanked or badly furnished bunch. Some of them have had another limb led from the base, but otherwise they have hardly extended more than 1 ft. from the points of the original rods. Some are just the same length and size as they were the season in which they were planted.

On another occasion, in 1867, I ran a Muscat Vine from an eye up to the top of the rafter the same year, about 19 ft. long, and left it that length, pruning all the others down the usual way. The year following (the second year) it bore fourteen bunches and the others two and three apiece, all about 2 lb. each; but the third year the Vine that had not been cut down, and which had been so heavily handicapped in the matter of cropping did not show a single bunch. The fourth year it did not show so abundantly as the others, but it produced enough for a fair crop, and since then it has gone on bearing like the others, from which it cannot now be distinguished, except that it has not a break along its whole length. I may state that I had no difficulty in getting every bud right down to the soil to break freely the first year of fruiting, notwithstanding the length of the cane, which was well ripened and as thick as a walking-stick.

I may state that I purpose extending a Vine of Barbarossa this year along the top of our late Vinery to the length of 60 ft., if it will grow as much as I expect it to do, and leaving it unpruned at the end of the year as a further experiment. J. SIMPSON.

Wortley.

GOLDEN CHAMPION GRAPE NEAR BRISTOL.

EXAMPLES of Vines flourishing with their roots in a cold border and their tops in a hothouse must surely be few and ill to find when your correspondents have to take us to the mild climate of the Bristol Channel to show us a Vinery in which the Vines are only pushing, and not in flower, near the end of March. I am informed that the Myrtle is hardy near Bristol, and that Fuchsias and scarlet Pelargoniums frequently stand the winter with little or no protection. Grapes, therefore, on hardy stocks, and with their roots partly inside and partly out, pushing late in March, can surely be nothing to wonder at. Here, in Yorkshire, and well up on the backbone of England, I could, at the present moment (April 5), show magnificent shoots and bunches, not in flower, on Vines with their roots entirely outside, with not a scrap of any kind of protecting material upon the border, and the treatment and the Vines have been the same for the past fifteen years. I should not be surprised if the temperature of the border was below the mean temperature of the Vinery, which we like it to be as nearly as practicable; the heat of the soil will, however, rise soon enough, and we are in no hurry with the crop, which comes on almost of its own accord. Probably Mr. Baines visited Bristol as near the end of March as the middle of it—at the date of the show there (March 20) possibly—and, if so, one feels still less surprise at the growth of the Vines at Henbury Hill. Grapes likely to be ripe in time for the autumn shows in the favoured west

of England ought to be produced without the aid of heated or protected borders of any kind, if they can be produced at all. As much is accomplished in the far north. Had the Vinery in question been full of ripe bunches instead of bunches in bud only, it would have been worth alluding to under the circumstances; as it is, it proves nothing more than one would have expected as a matter of course.

J. S. W.

GRAPE CULTURE IN MARKET GARDENS.

MANY of the practices described by "C. W. S." (p. 264) as being adopted by London market gardeners are worthy of imitation in private gardens. I am of opinion that the London market gardeners are not surpassed, in a general way, either in this country or on the Continent, judging by the number and quality of the crops which they take off their ground during the season; but in the matter of Grape culture, your correspondent will perhaps excuse my saying that I think he has been led into an error in stating that "it is remarkable how much more quickly market gardeners fill their houses with Vines than private growers." To fill the houses with canes in two years and take excellent crops off the Vines the third season, as the market gardeners are said to do, is not a remarkable feat. Many private growers who understand Vine culture ordinarily will fill their Vineries with good canes the first season from eyes, and take a heavy crop off the Vines the year following; and this goes on by a system, more than once described in THE GARDEN, till the permanent Vines come into full bearing. I have done this frequently myself, and on one occasion we finished an excellent crop of Black Hamburgs in May, planted the house the same month with newly-struck Vines, and took a crop the whole length of every raster 18 ft. long the season following, not losing a season. Between the supernumerary fruiting Vines permanent ones were run up the same season, and between the two sets a full crop has been obtained every year since, and that was in 1871. The early Hamburgs were done away with to extend the late supply. But even this quick work has been exceeded in private gardens, where Vines struck from eyes in spring were made to produce a crop of fine fruit the same season, that is, in about nine or ten months after the eyes were put in, a feat not likely to be surpassed, I imagine; but it may be performed by any one who can grow pot Vines fairly well. I question also very much if anything is gained by the practice of allowing the laterals to extend as much as five and six joints beyond the fruit, which the market gardeners, according to "C. W. S.," consider enables them to crop their Vines "much heavier than they otherwise could do." It is important to have sufficient good and mature foliage upon the Vine; but whether it be before or behind the bunches does not matter in the slightest degree. Indeed, considering how closely together market gardeners grow their Vines, as a rule, I am puzzled to understand where they can find room for such a profusion of lateral growth. I doubt if either market or private growers exceed or approach the Grape growers at Thomery, near Paris, in a general way, as regards constant and heavy crops; and yet their system of training and pinching the shoots is the most severe that could be devised. The Vines are planted only 1 ft. 4 in. asunder; two shoots are often trained from one bud; many of the shoots carry two bunches, and all are pinched just about one leaf beyond the last bunch, and no after growth is permitted, for the laterals are pinched as soon as they can be laid hold of by the finger and thumb. The leaves are also thinned out when the fruit begins to colour early in August, to let the sunshine reach the bunches. Yet the Grapes so produced are well finished, crisp, and excellent in flavour. It would appear that a certain quantity of foliage is needed to nourish the fruit, but not so much as one might imagine; and so long as that quantity is kept in good health, I do not think the fruit is in the least benefited by a further extension of growth. It should be borne in mind also that it is the first-formed leaves, that come to maturity with the fruit, upon which most depends; if they are lost or injured by disease or otherwise, the fruit will not finish in a proper manner, no matter how much young growth is produced afterwards.

J. S. W.

CULTURE OF THE PINE-APPLE FOR MARKET.

IN an early number of THE GARDEN I made some remarks on the culture and season for having Pines ripe for market, but since then times are changed, owing to the introduction of the St. Michaels Pines, which have reduced the price to such an extent that growers of Pines for market have mostly done away with them. Still, there is a season yet when we get no St. Michaels, and that is the months of July, August, and September, a time when the English Pine can be grown to its greatest perfection and at the least cost. In order to get them ripe in the three months just named, the suckers should be taken off the old plants about the middle of February, and potted

in 7-in. pots, well drained and clean, in some good top sod of a light loamy character, full of fibre, with a good sprinkling of rough sand well intermixed with it. Pot firmly. As top sod is often difficult to procure, I may add that Pines will succeed fairly well in any open mixture, provided it is sweet. Always avoid mixing manure with the compost, as it retains water and sours the soil. When the suckers are potted plunge them in a bed of tan, which has been prepared by sifting all the dust out of the old tan, and replacing it with fresh material; mix all well together. In this way a steadier heat is maintained than would otherwise be the case, and in order to preserve the roots in a healthy condition, the bottom-heat should not exceed 85°, with a close atmosphere of 60° at night, and 65° by day. No ventilation will be required during February and March.

If the fires be properly attended to, in six or seven weeks the suckers will be well rooted and should at once be repotted into 10-inch pots, in which they should be fruited, and again plunged in the tan bed, which should have been previously forked over, keeping the atmosphere close and moist. Always avoid giving any check to the plants, as it is apt to cause them to fruit prematurely; in fact, in order to grow good fruit in the least time, the plants should never receive a check from the time in which the suckers are potted till the fruit is ripe. Watering must be carefully attended to; a short supply is apt to cause the plants to push fruit prematurely; too much rots the roots. It is best to allow the soil to get nearly dry, and then give sufficient to thoroughly wet the ball.

If the soil be fairly good no manure-water will be required before the plants show fruit, but afterwards give a regular supply in a weak state, which is much better than a strong dose now and then. Sheep or cow manure makes the most suitable liquid, mixed about two days before it is wanted. As the sun gains more power give air early, and by degrees; in a light house, with the plants close to the glass, less ventilation and less fire-heat are needed, conditions alike beneficial to the plants and the pocket. Pines should never be shaded; give air early, keep the fires low, and shut up early in the afternoon, slightly damping the plants overhead with the syringe. If the thermometer should run up to 100° no harm will be done, provided the pipes are cool. Stir the fire in time to get the pipes warm by the time the sun begins to decline, so as to maintain a steady temperature for the night, and by the time November sets in the plants will have made good growth, when a drier atmosphere must be maintained to well ripen the plants. This induces them to form a good centre of short, thick leaves, a sure sign that good fruit will be the result.

During December and January a dry temperature of about 60°, with no more water at the roots than will keep them from being dust dry, is what they require. When February sets in fill up the evaporating pans, moisten the paths, and allow the thermometer to run to from 65° to 70°, according to the state of the weather outside. Maintain a bottom-heat of from 70° to 80°. By the end of February the fruit will begin to push through the centre, when a genial, growing atmosphere must be continued by damping the surface of the bed with the syringe. Never syringe the plants overhead after they show fruit; it induces the production of large crowns. If the fruit should be coming in too early give as little fire-heat as possible. Under such conditions the fruits swell better and are longer in ripening, but it is better to have them in a little early than too late, as they can be kept on the plant five or six weeks after they are ripe in a cool, dry place. As soon as the fruit begins to change colour, ventilate freely, and maintain a drier atmosphere, which very much improves both colour and flavour.

JAMES SMITH.

Waterdale.

OUR FRUIT PROSPECTS.

THESE continue bright and fair. Seldom have all tender stone fruit trees been more thickly crowded with fine, healthy blossom-buds. The fear that the unusual severity of the past winter may have pierced through the dormant buds and injured them in that state has proved groundless. The stigma and many of the embryo fruits, as well as the stamens, seem safe and sound; they are now (April 6) fast bursting into blossom, and from the time they open till they are sheltered by the leaves and safe from the stinging severities of the late frosts of May is the season of greatest anxiety to the cultivator. With, however, anything like fine weather and ordinary skill in the application of protective expedients, it is hoped that a good crop of wall fruit may be insured. We have first applied our glass copings and a thin screen of Spruce, Yew, and other boughs, as recommended a week or so since in THE GARDEN, and feel pretty confident concerning the result; though, of course, there is many a slip in the fruit crop between April and the end of May. The wood is, however, as a rule, strong and healthy, and the buds remarkably plump and full; they are also later by several weeks than ever I remember to have seen them, and all these things are very much in their favour.

Pyramidal Pears and Plums seem, however, rather thin of bloom in these gardens, but possibly this may be only local. Pear bloom on walls barely seems an average crop, though many of the trees are well laden. Cherries and Apples show well, and it is to be hoped the Apple crop may prove an average one this season, for a scarcity of Apples proves by far the most serious loss to all classes of society. Other fruits may be looked upon as luxuries, more or less, but Apples as necessary articles of diet; hence, their scarcity and consequent dearth became a serious drawback to the comfort and health of the people. For Apples as food are proverbially sanitary. I had long the pleasure of knowing a chemist who was also a clever vegetable physiologist and botanist, whose only medicine for himself for years was a baked Apple. But the chief use of Apples and other fruit is to render medicine unnecessary. Apples are also nutritious, and are asserted to be highly favourable to the sustentation of brain power, by supplying the system with abundance of phosphorus and other matters. Be that as it may, one has noticed how popular Apples are among all classes, and with what eagerness children desire and devour them. The scarcity of Apples has no doubt added considerably to the sense of deprivation and distress that has so largely prevailed among the industrial classes during the past winter, and the badness of trade and the lack of money have placed the somewhat full supply of excellent American and Canadian Apples beyond reach of the purchasing powers of the working classes. It is, therefore, to be earnestly hoped that, among other symptoms of returning prosperity, one of the most cheerful and promising may be the strong probability at least, for it is yet too early to think of the certainty, of a good crop of fruit.

D. T. FISH.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Setting the Blooms of Peaches and Nectarines.—I quite agree with "D. M.'s" remark (p. 288) in reference to this subject. Provided the trees are properly pruned, the roots through the autumn and winter well supplied with manure and water so as to keep them at work, and ventilation given judiciously while the trees are in bloom, in order to dry the pollen thoroughly once every day, there need be no apprehension about the flowers setting. Should the weather be adverse, then, of course, more fire-heat is necessary, in order to obtain sufficient ventilation. I may add, that the trees here have annually, for years, carried extraordinarily heavy crops of good fruit, the result simply of proper root action, vigorous growth, and seasonable ventilation.—Tnos. COWBURN, *Sunbury Park*.

Sauces for Strawberries.—A few weeks ago one of your correspondents disputed the utility of using saucers of soil for Strawberries, as recommended by me, urging that extra feeding from the beginning would produce leaves at the expense of flowers and fruit. In looking over a successional batch of Strawberries the other day previous to thinning out the berries, it occurred to me to send you two plants cut over at the surface of the pots, just to show you whether or not such a practice is attended with the bad effects stated by your correspondent. The two kinds I send you are a fair sample of about 400 plants of the same stage just now and of our early batch now over. The sample of Black Prince grew in a 4½-in. pot, and the Vicomtesse Héricart de Thury in a 5½-in. one. The first has about seventy well-developed flowers upon it, and mostly all set perfectly and swelling freely from the size of small Beans downwards; and the last has about sixty or more still farther advanced. I think I may say also that you will find that the foliage in both cases is not too vigorous, nor yet by any means unhealthy. I am not in the habit of confidently recommending any plan to your readers that I am not sure about myself, and I send you the enclosed as vouchers in this particular case.—J. S. W. [No Strawberry plants could possibly be better set with fruit than those in question, or more healthy or promising in every respect.]

Sluggish Seeds.—A quantity of seed of different varieties of *Primula amena*, sown directly it was saved last August in a shallow box and placed in a greenhouse, where it has ever since remained, is just now germinating freely, but not a single seed grew within six months from the time of sowing. This proves how necessary it is in the case of certain seeds to have patience. Those who did not understand the nature of seeds of this description would have been apt to conclude that they were dead. I have had recently a similar time to wait for the germination of home-saved seed of *Lilium auratum* sown in the autumn, but it came up well in the following summer. Whilst some seeds will germinate freely at any time, there can be little doubt that spring time is the most natural season, and hence the germination of many things that at other seasons refuse to grow.—A. D.

NOTES OF THE WEEK.

Chionodoxa Forbesi.—This pretty bulbous plant, a native of Asia Minor, has again proved perfectly hardy in Derbyshire, and has stood the winter without any protection in the open ground. It has been fully three weeks in bloom. *Orchis foliosa* is also pushing up strong shoots, although quite unprotected this winter.—M. S. LOVELL.

Begonia Ingrami.—Of all *Begonias* with which I am acquainted none are more serviceable for winter blooming than B. Ingrami. Plants of it here commenced flowering in October last, and the same plants have kept on blossoming, without intermission, up to the present date (April 14), and they have still an abundance of bloom on them.—J. JEFFREY, *Cork*.

Roses v. Camellias.—It is reported that in Paris a great effort is being made to revive the use of Camellias for evening wear; but white Roses are preferred because of their more graceful appearance.

Smart Frost on Saturday and Sunday mornings, and sleet on Sunday and Monday last, destroyed all leaves and stems of the early Potato crop in the neighbourhood of Penzance. Some hundreds of acres are either wholly destroyed or seriously checked, the damage being many thousands of pounds.—"Cornishman."

National Auricula Society.—The third annual exhibition of the southern section of this Society will be held in the Conservatory at South Kensington, on Tuesday next, the 22nd inst., when a very interesting display of both Auriculas and Polyanthus, in addition to the usual fortnightly exhibits of the Society, will be made.

Bongardia Ranwolffii.—This, without doubt, one of the rarest as well as one of the most beautiful of hardy plants in cultivation, is now in fine flowering condition at Kew. It is a member of the Barberry family, though remarkably unlike one, as it has a depressed, Cyclamen-like stem, from the apex of which spring the leaves, which are divided into from three to eight pairs of leaflets, each of which is again divided, presenting the appearance of being arranged in whorls. These are wedge shaped, of a pale glaucous-green hue, and each has a conspicuous reddish-purple blotch at the base, thus rendering them very attractive. The flower-stem is much branched, rising 6 in. high, and bearing roundish, golden-yellow blossoms from ½ in. to 1 in. across, which droop gracefully from slender stalks. Though now so rare, this beautiful plant is amongst the earliest recorded occupants of the garden, as it is mentioned by all the early writers on garden plants. It has a wide range of geographical distribution, as it is found from the Greek Archipelago to Afghanistan.—W. G.

A New Dracæna.—One of the most stately species of this genus that we have yet seen is one which is now and has for some time past been finely in flower in the Palm House at Kew. It is tree-like in habit, with a woody stem as thick as a man's arm, and forked at the base, each branch rising 6 ft. high and terminated by a huge head of deep green foliage, similar in appearance to the ordinary broad, green-leaved Cordylines. From the centre of each head is produced an immense panicle, over 3 ft. long, which branches in a candelabra-like manner and droops most gracefully; on this are arranged myriads of rather small greenish-yellow blossoms, which emit a peculiar honey-like odour. The name of this handsome novelty is *D. floribunda*, of Baker; its native country is not given. Though it possesses such imposing grandeur when in a flowering state, it can never become an object of general culture on account of the large size which it must apparently attain before it produces flowers, but when associated with other large-growing subjects in suitable structures, as at Kew, the effect which it produces is such as needs only to be seen to be appreciated.—W. G.

MR. T. BLAKE WIRGMAN has completed a portrait of Mr. Robert Marnock, which is considered by all who have seen it to be remarkably successful both artistically and as a striking likeness.

The Silver Wattle (*Acacia dealbata*).—In "Notes from Kew" (p. 209), it was stated that the large plant of this tree was then in splendid bloom in the temperate house of the Royal Botanic Gardens. It may interest some of your readers to know, that in spite of the thermometer being at 19° and 17° here at night, and snow on the ground for a week, more than once, with frost and snow again last week, a plant of the same tree here in the open air, on a north-east bank which is by no means well sheltered, is covered with bloom on every terminal shoot, and has been in full flower nearly three weeks. The plant, which is about thirty years old, was killed to the ground in 1860-61, but recovered, and is now 26 ft. high, and has produced me some healthy young plants from suckers which it threw up one season. The foliage has suffered slightly from the winter, and has lost much of its silvery hue, but it stands out in good contrast

with a large *Pinus insignis*, which forms a background to it, as seen from the windows of the house. I sent a sprig of it to Kew in March, and Sir J. D. Hooker informs me that the flower-balls of my specimen are, as might be expected, rather smaller than those under glass at Kew, and the leaf less silvery.—J. N. ROGERS, *Penrose, Helston, Cornwall.*

Notes from Vienna.—I went the other day to Schönbrunn to have a look in the houses. In these I noticed several *Acacias* in flower, such as *A. affinis*, *angustifolia*, *denaltata*, *Douglasii*, *floribunda*, *glaucescens*, *longifolia*, *lineata*, *reclinata*, and *vestita*. *Artemisia ringens*, a curious *Aroid* from Japan, with *Sedum*, which I will probably prove to be hardly. *Primula acaulis violacea* fl.-pl., also kept in pots, is now bearing flowers in profusion. I also noticed a small plant of *Soldanella alpina* in flower. Of Bunkins the following three species are in flower, viz., *B. spinulosa*, *Gartheri*, and *ericifolia*. I also found *Calpurnia* (*Virgilia*) *capensis* a very handsome plant, with whitish-pink flowers, in great beauty. A week ago our *Wallflowers* and other hardy and half-hardy herbaceous plants were planted out in the beds devoted to spring flowers. We generally have three or four kinds of *Wallflowers*, and as edgings we use *Alyssum saxatile*, white and blue-flowered *Forget-me-Nots*, and *Aubretia deltoidea*. *Violas* are great favourites here, especially those with pure white, light blue, or yellow flowers. We have again heavy falls of snow, and the nights are very cold, so much so as to stop all outdoor work in the way of planting. Since November last we have had snowfalls every week, and they seem very reluctant to leave us.—LOUIS KRATSCHE.

ANSWERS TO CORRESPONDENTS.

Bedding Plants.—What plants are best suited for planting round a fountain? and also for beds in a conservatory, the planting to be low, being in the way of a dwarf, rounded, or winged. (C. A. H.)—This is a dreary character, and situated on a parterre, then the ordinary class of bedding plants will be most suitable, such as *Pelargoniums*, *Calceolarias*, and *Lobelias*, which can be replaced with small evergreen shrubs in the winter; but if of a rustic nature, then use winter trees, such as the dwarf *Sorbus*, *Sedum*, *Teuclium purpureum* type, variegated and green *Periwinkle*, and moisture-loving *Alpine* plants, such as *Gentiana acaulis*. For your conservatory border, as the planting must be low, it will be best to grow the usual conservatory decorative plants in small pots to be placed in the beds, which may be carpeted with *Lycopodium dentatum*.—W. H.]

Camellias under Verandahs.—In growing *Camellias* under a verandah should the plants be in the ground or in tubs or pots? Is the roof of the verandah sufficient protection from frost? Should they be trained against the wall of the house? and if planted in the ground would they require to be kept watered?—(G. H. H.)—*Camellias* should be well trained to the wall of the house, and if there be border space they will be best planted out. They should have a well-drained bottom, and at least 2 ft. in depth of soil, which should also be 2 ft. or more in width. In the summer-time, they will require copious supplies of water, and should be well spruced in the summer season if the verandah prevents the rain from washing the foliage. Nearly all *Camellias* are as hardy as common *Laurels*, and they will, therefore, need no winter protection.—W. W.]

Rabbits Barking Trees.—Do rabbits eat the bark off evergreen Oaks, and what remedy is best to apply to prevent their damaging any trees?—(C. T. H., *Hartwood, near Jersey*.)—(Though I have never known an instance of much damage being done either to the evergreen or common Oak by rabbits, yet I have on several occasions known them commence upon both; and during such a winter as the past one very few trees have been spared in localities where rabbits abound. With us they have attacked *Fir* and *Pine*, *Holly*, *Ash*, *Chestnut*, *Beech*, *Poplar*, and many other trees. After trying many mixtures for keeping rabbits from injuring young trees, I have found the following to be the most efficacious:—Take nearly equal parts of cow manure, night-soil, and quicklime, and beat them up together with water in a pail to such a consistency that it can be applied with a common whitewash or tar brush; to this add a little Stockholm tar and linned oil. Apply freely to the stems and lower branches in dry weather, and the plants so treated may be considered safe for a year.—A. J. BERNARD.]

Propagating Camellias.—Can *Camellias* be propagated from cuttings put in next 3rd, 4th, or 5th of October like other evergreens? also can they be propagated by layers, a variety in what? Or what is the best way to propagate them?—(D. H.)—*Camellias* are best propagated by grafting or inarching them upon the common single red variety. The latter is obtained by means of cuttings struck in heat, or by means of seeds. The best months for striking them are in August and September. Seed sowing should be at an early date in bottom-heat. For directions for grafting and inarching see Vol. XIII. of THE GARDEN (p. 383).

Evergreen Ferns.—Kindly give me a list of small-growing evergreen Ferns that will live in a case outside a window during winter, facing the north-west. Would a green glass room in any way assist me?—SUBSCRIBER. [Try *Asplenium Adnigrum*, *algum*, *fontanum*, and *A. marium*; *Ceterach officinarum*, *Laetia Filix-mas crispa*, *Polypodium acrobaticum*, and *P. cristatum*; *Polystichum angustifolium*, *Scotopendrium Wardii*, and *Lomaria alpina*. There would be no harm in having the glass of the roof slightly tinted with green, but ordinary glass would be equally good.—H. A.]

Fumigating Vines.—Would it hurt Vines to fumigate them with Tobacco paper? and until what time? as regards the fruit, would it be safe to do it? Thrips are also making their appearance.—Z. Y. X. [Fumigation, if properly done, will not injure either the Vines or the Grapes, which may be fumigated up to the time when they begin to change colour. Sponging the leaves infused with clean water will keep the thrips in check till the crop is ripe, when more severe measures may be resorted to.—S.]

Phorium tenax in Water.—Am I likely to succeed in growing *Phorium tenax* out-of-doors in Sussex if I plant it in a basket or hamper of suitable soil, and then drop the hamper in a pond, so that the top of the hamper is 1 ft.

below the surface of the water? The roots could never be frozen, but I am afraid that the plant might rot off in the winter, although it might grow well in the summer.—E. G. L. [We have certainly seen this plant growing in water in the south of Ireland, and it is well worth a trial in that way in Sussex.]

Has Lead Wire any Injurious Effects or Not?—The effect complained of (p. 370) may be due to galvanic action. I should recommend the use of lead labels attached with lead wire as a preventive. If a piece of zinc and a silver coin be placed in the mouth, the galvanic action may be observed by a strong and peculiar taste, whereas if they be put into the mouth separately nothing whatever occurs. The action of lead and iron may be observed on old iron railings, where the lead used to fasten the iron to the stone has eaten the iron in many instances completely away. Probably galvanic action is the cause of injury to young shoots of each tree, through being trained against galvanised iron training wires.—J. B. B. B. B.

Camellia Sport.—In answer to "T. B." (p. 307), allow me to say that I picked last week from a white *Camellia* in the open air, about thirty-five years old, a single bloom which was entirely rose-coloured, though the flowers usually have no streak of rose, and I think I have seen the same sport on the same plant before.—J. J. R., *Penrose, Helston.*

Names of Fruit.—S. W. S.—Apparently Winter Nells.

SOCIETIES AND EXHIBITIONS.

NEWCASTLE-UPON-TYNE HORTICULTURAL SOCIETY.

THIS is one of the oldest horticultural societies in England, having been established in 1824. During the time in which it has been in existence it has been subject to many vicissitudes, but never has it been so prosperous as it is at present. During the last few years its affairs have been in the hands of energetic business men, who work well together, and who have been successful in raising the Society to a position of eminence. There are annually three flower shows; the first was held this year on April 9 and 10 in the Corn Exchange and Town Hall, and, taking it upon the whole, it was, perhaps, the best spring show that the Society has ever held. There were eighty-six exhibitors, and the entries comprised 2187 plants staged for competition in the various classes; they consisted of 864 pots of *Tulips*, *Hyacinths*, and *Narcissi*. The arrangements made by the managing committee were excellent, but the exhibitors did not do their best to maintain them. For instance, some of the groups of *Hyacinths* were set up in a most careless manner, the tallest spikes being in front and the short ones behind, mixed up anyhow without regard to contrast or harmony of colour. As a set-off to this, some of the groups were well arranged, notably the first prize one in the class for twenty-four pots of *Hyacinths*. The effect of some well-grown pots of *Lily* of the Valley was considerably lessened by those in the back row being lower than those in the front. The use of a few blocks, on which to elevate the pots, would have been of considerable service in many cases.

One of the best features of this excellent exhibition was a collection of *Dielytra spectabilis*, consisting of a row of well-grown plants nearly as long as the room, and a very good effect they produced. It is worthy of note that this fine herbaceous plant is quite hardy in any part of the British Isles. Its pendulous spikes of pretty rose-coloured flowers were, on this occasion, quite charming. Then there were groups of *Hepaticas*, comprising the blue and double red forms only. Why cannot the single white variety of *H. triloba*, and the still more charming pale blue *H. angulosa*, also be grown and exhibited?

A class was provided for hardy *Primroses*, and, therefore, one would have expected to have seen the many fine varieties of *Primula vulgaris* exhibited, but this class was represented by but six small plants of *Primula japonica* (Sieboldi). With the *Lily* of the Valley came a pretty bank of bright blue *Forget-me-nots*; then there were *Wallflowers* of the double German type, well grown indeed. *Auriculas* and *Polyanthuses* were shown in considerable numbers; the pretty *Spirea japonica* formed in itself quite an exhibition. *Cinerarias* were represented by several groups of good strains of seedlings, but the plants lacked training in the form of good specimens.

Stove and greenhouse plants were represented by exceedingly good specimens of *Imantophyllum minimum*, and a very fine variety named *superbum*. There was a very good specimen of *Camellia Mathotiana* alba, with superb pure white imbricated blooms. There were also well trained *Epacris*, and fairly well bloomed examples of *Azalea indica*. *Orchids* were represented by the old but very useful *Oncidium spheculatum*, the popular *Dendrobium nobile*, and the scarce but handsome *Cymbidium acurum*, with ivory-white pale yellow-lipped flowers. *Richardia axiophora* was represented by robust specimens having large flowers.

Passing to the room reserved for vases of cut flowers, bouquets, button-hole flowers, and cut flowers in stands, we found a most excellent arrangement, much superior to that of last year. The vases numbered fifteen, and they were well arranged, the first prize one being particularly fine; a few of them were rather overdone with

flowers—certainly a grave fault. Bouquets were very numerous, and a large proportion of them were very tastefully arranged. Cut flowers comprised Roses, Rhododendrons, Azaleas, and Camellias. These were very fine indeed, and made an exceedingly good display. Although the weather was very unfavourable, a large attendance of visitors thronged the rooms during the time when the show was open.

J. DOUGLAS.

SOME OF THE PRIMROSE FAMILY.

Of all hardy spring flowers, can any surpass in beauty or variety of hue these early favourites? From the wild Primrose by the river's brink to the last-discovered foreign-bred member of this widespread family, all are lovely. Whether these pale, delicate blossoms nestle in Moss, on sunny banks, or light the dark recesses of deepest dell in copse or covert, contrasting with Wild Hyacinth, Wood Anemone, and Dog Violet, how beautiful they are. Later, too, when the fields are dotted with yellow Cowslip, how gay the children intent on gathering the golden treasure—wealth so easily acquired, the pursuit of which brings colour to the cheek and pleasure to the heart. Cowslip, Oxlip, and Polyanthus, with their grander relatives Cyclamen and Auricula, all belong to my friends the Primrose family. There is a story told, how long ago, hard workers, gold seekers, afar in the Antipodes, walked many weary miles to see a little Primrose in flower that some home-loving emigrant had carried across the ocean to that distant land from the mother country, and how stem eyes were dimmed by tears as recollections of home and childhood awakened in the hearts of careworn, toilworn men. I do not know how the story (a true one) ended; perhaps kind deeds of love and penitence, and half-forgotten prayers sprang from those softened moods; but surely the little flower had fulfilled its mission of love, and deserved the pretty name by which the Germans know it, *Himmels Schlüsselchen* (Heaven's Key).

We must, however, leave the woods and fields (with large noses ays for homes and hospitals) and peep into the cottage gardens, gay just now with crimson and lavender and rosy-pink and deep red blossoms, all Primroses and Polyanthuses, hardy as sweet, brightening the smallest patch of garden ground, thriving in the poorest soil. Further on, even in the humblest attic window of the town, you may see a root of Primroses in a flower pot, making the dreary room gay with a scent and glimpse of country life; or, more touching sight still, in a broken glass a bunch of Cowslips, a fast fading record of a brief and hard-won holiday. To every reader of *THE GARDEN* I would say cultivate these earliest and loveliest of hardy flowers, not the single Primrose only, but the double sorts also, miniature Roses in form, and as hardy as their frailer progenitors. Why these double Primroses are, comparatively speaking, so little grown is a mystery to me. Many country gardeners to whom I have spoken have never or rarely seen the double yellow, and have failed repeatedly to procure me a specimen, and many amateur gardeners have never heard of such a flower!

For arrangements of flowers for the table what is prettier than a plate or saucer filled with Moss and rows of double Primroses intermixed with pink or scarlet Pelargoniums and sprays of Forget-me-not, and fringed with fronds of Maiden-hair Fern? or, for button-hole bouquets, one or two blossoms of the white or yellow double Primrose, with purple Cineraria or Czar Violet? Some have double rose and double purple kinds; these are new to me, but I doubt not they will prove as lovely as my other favourites. To every one who has a garden, and delights in it, I commend again and again these freely-blooming pets of mine. Plant them now; they will neither droop nor lose their buds and blossoms on removal, even when in full bloom. Unlike their companions, the Hyacinths, they want but little care. When spring has brightened into summer they "die down," indeed, but a little leaf-mould sprinkled over the sleeping beauties is protection from the fiercest sunshine, and even Pelargoniums or other June belles planted between them serve to throw a friendly shade, and do no harm to their unobtrusive neighbours. Next year these will push their leaves and buds through January snow—promise of warmer days to come, and in themselves be some of the fairest gems in spring's fair coronet.

J. P.

THE SNOWDROP SEASON.

This year this has been the longest on record, as far as I can remember. Notwithstanding the lateness of the season, not a few of these ever-blossomed in February, and here we are at the end almost of the second week in April, yet still we are well provided with Snowdrops. Even the common single is still in flower, and the Crimean variety is in full beauty. These are not only much more graceful than the double Snowdrop, but they are likewise valuable for their lateness. In seasons like the past, when so many spring flowers are either crippled or killed, it is pleasing to turn to masses of Snowdrops

vigorous and beautiful as ever. It is surprising that more of these matchless spring flowers, which thrive anywhere, are not grown. Their roots are vermin-proof, and so are their leaves and flowers. While Crocuses are stamped out root and branch, Snowdrops are to the fore in graceful masses of unmarrred beauty. Neither slug, nor snail, nor mice, nor rabbits, nor sheep, nor other ruminants interfere with Snowdrops; hence they run out of the garden into the woodland walks and woods, and all over the meadows. No flowers are more easily grown. Perhaps, however, they prefer a sheltered, partially shaded place and a lot of light warm soil, somewhat rich in humus. I have seen them thrive in all soils, from thin sand to stiff clay, and in all sites, from the semi-darkness of a thickly overhanging wood to the most exposed upland pastures; perhaps, however, they are most at home in the wild garden or in woods and plantations. In such places Snowdrops alone, or relieved with a few patches of the commoner blue early Scillas, produce artistic results beyond reach of all the more formal combinations of more expensive and formal art. The spring Forget-me-not (*Myosotis dissitiflora*) is also, in ordinary seasons, a good companion for Snowdrops, but this year, speaking broadly, this beautiful plant has failed. Of course the term failure is not applied absolutely. We have many hundreds of it struggling into blossom; a great many of these, however, are somewhat brown and patchy. That condition in April is called failure, and it is, compared with the display of azure beauty with which this lovely Forget-me-not has been wont to overspread beds and borders at this season of the year, or rather a month earlier, in the heyday and pride of the Snowdrop season. After flowering, a partial fading of the leaf is the best time for dividing and multiplying Snowdrops. The practice of keeping the bulbs out of the soil is not, by any means, one to be commended; far better divide and plant at once. The bulbs will thus be kept plump and fresh, and be able to start in good time next year without risk or trouble. Plant six roots in a patch 6 in. deep; single bulb planting rather tries the patience of cultivators, but patches of six will at once, or soon, swell out in masses of sufficient magnitude to bear further sub-division. Any soil will grow them, but could a spadeful of light earth composed of equal parts of sandy loam and leaf-mould be added for each group of plants, they soon, by the superior strength of their flowers and the more rapid increase of bulbs, would show they were not insensible to the care of the cultivator. But this may be called one of the refinements of cultivation rather than a necessary adjunct to the successful culture of the Snowdrop, either in the garden, wood, mead, lawn, or by the side of woodlands, roads, or walks.

D. T. FISH.

PROPAGATING.

GENETYLIS (HEDAROMA) *TULIPIFERA*.—This is easily increased by means of cuttings, made of the side shoots, put in in April and May. The pots for their reception must be prepared, so as to allow $\frac{1}{2}$ in.

from the rim for bell-glasses to stand on. The soil should consist of half peat, and the other half clean yellow loam and silver sand sifted fine and pressed into the pots, which must be well drained, rather firmly. Make the cuttings as shown in the accompanying illustration, put them in firmly, and give a good watering. After the lapse of an hour or so the glasses may be put on, and the pots placed on a gentle bottom-heat (a tan bed is best). In order to obviate an excess of moisture, the glasses should be taken off and wiped every other morning, an operation which must receive particular attention, or the leaves will fall off. As soon as the cuttings begin to grow, tilt the glasses daily for a few hours, and by degrees they may be left off altogether.

The young plants thus raised will be ready for potting off and placing in a shady, cold frame in August, keeping them close and shaded from sunlight.

H. H.

Aucuba Berries.—"J. G." (p. 259) says that *Aucuba* flowers may be readily fertilised by planting a male *Aucuba* in a bed or anywhere within the radius of a few yards. I have about 200 female *Aucubas*, and about a dozen male ones planted amongst them, but I have never had a single berry. My male plants always flower long before my female ones. The male ones are now in full bud, but the female plants are not showing their buds yet. Is my experience in this respect exceptional? If not, what explains "J. G.'s" success, and that of previous correspondents, who, I have observed, have written similarly? It may be said I might save the pollen, but that is not the point. I find some difficulty too in doing that, for there seems to be very little pollen indeed; so little that it can scarcely be collected. Is my experience again exceptional?—W. H. TILLET, *Sprovestonbridge, Norwich*.

"This is an art
Which does mend Nature: chance it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

CHILDREN'S GARDENS.

THERE is a period in the life of every boy and girl when they feel a desire to have a garden to plant and cultivate with their own hands. This desire may assume various shapes, according to the nature or disposition of the child, and with some perhaps may only be of a fleeting character. But, making every allowance for the fickleness of youth, enough of sterling thoughtful material remains to produce, if properly utilised, an influence for good, not only on their own lives, but also on all with whom they may come in contact. Gardening, or the cultivation of plants and flowers, will not act upon all alike, neither will its benefits be conferred upon all in the same degree; but I am convinced, from early experience, and what has come under my observation since, that if, during a boy or girl's early life, a love of gardening were encouraged, it would develop into one of their greatest pleasures. In the same way as the trained eye can see in works of art, such as paintings and sculptures, beauties that are hidden from the untrained, so also the man or woman who has in early life learned to know and love plants and flowers will derive more refined and lasting pleasure from the frequent changes that Nature is continually spreading out before them than they otherwise would do. Give young people but a yard or two of ground to cultivate in some shady corner and they will be contented. What if they do frequently transplant the Primroses and Daisies which they bring in from the banks and hedgerows in accordance with their changeable whims and fancies; they are gaining knowledge; they are learning something of the mysterious workings of Nature, the study of which never cloys or wearies.

One of the most interesting children's gardens which I have ever seen was situated in a dingle or dell, and would now, I suppose, be called a wild garden. Though the period to which I am referring is something more than twenty years ago, yet the scene rises before me as vividly as if it were but yesterday. It had thickets of Thorn and Birch, where the nightingales sang and reared their young. Open, sunny spots were there, too, where many rare kinds of indigenous plants flourished, and around which lingered many pleasant associations. There were shady spots for Ferns and other shade-loving plants, and banks whereon the wild Thyme grew, emitting, when brushed by the feet, a pleasant odour. Where the shade was dense the ground was carpeted with the brightest, freshest Moss, and, to make the situation absolutely perfect, a babbling brook meandered through the valley, overhung in places with Brambles and Willows, its course being occasionally broken by piled-up boulders or other impediments, that gave louder voice to its music and buoyant life to a most charming spot. Such situations for children's gardens can only be found in the grounds of the wealthy, but I am convinced that any one with an eye for such matters could easily find positions in semi-wild spots where the hand of Nature has already laid the foundation for interesting gardens for children, where they might—encouraged occasionally with a kindly guiding word—work them according to their own ideas. Girls especially would find this kind of gardening instructive and interesting.

Many of our British wild flowers are as beautiful as expensive exotics. What banks of Primroses, Violets, Bluebells, and Lily of the Valley might be had! and the hardy species of *Ceraniums* are quite as interesting, if not quite so showy, as the glaring-coloured *Pelargoniums* common in the parterre. What a sight masses of Snowdrops, Aconites, and Wood Anemones would present early in the year! When left long in one position they become naturalised and flower all the better for it. In an article of this kind one cannot notice a fifth part of the beautiful wild flowers that might find a congenial home in such a garden, nor yet set forth the interest which the collecting and bringing home the plants would excite in the minds of the young. How easily, too, and pleasantly might a competent teacher, under such circumstances, incite a desire for and afterwards instil into the youthful mind a knowledge of the science of botany, which, too often, as commonly taught, is but a dry study, not very enticing to the youthful of either sex. Most of the work would be light, and such as children could do with a little kindly, unobtrusive guidance. In but few cases would a man's labour be required after the place was laid out. Such a garden would annually grow in interest from the additions made to it, both in plants and seeds, until not only children, but older people might be seen wending their way in the direction of the children's garden. There must be a good dry

path leading to it and through it, and it must be so laid out as to embrace the prettiest spots and views. In our climate there are many wet days, and a garden that could only be entered in dry weather would not satisfy the impetuous youthful mind. Arbours and bowers covered with creepers and furnished with rustic seats would come in due course, as one of the earliest efforts of man, both civilised and savage, is to build himself a shelter after his own peculiar fashion on or near the spot which he cultivates.

The foregoing sketch only illustrates one phase of gardening for children, but there are many others which can now be only glanced at. The bold, resolute boy, desirous of acquiring distinction as a cultivator, might be indulged with a plot of ground in some conspicuous portion, where a feeling of pride would impel him to be energetic and industrious. In this way the dispositions and impulses of children might be directed into a good channel, and even their very failings drawn upon to strengthen their moral nature. If we descend lower in the social scale, many of the artisans' and labourers' children would take to gardening if permitted and encouraged to do so; I have, indeed, often seen more enthusiasm among this class of children in their gardening operations—generally under difficulties—than in the case of those of a higher rank in life.

But, apart from the influence that a care of, and love for, flowers is capable of exercising over a child's future, there is the further most interesting study of insects and their modes and habits of life, and the work which they do. Some of your readers are doubtless acquainted with the works of De Saint Pierre, a genial, kindly French writer upon natural history of the last century, and the description he gives of the thirty-seven species of insects that visited a single Strawberry plant standing in a pot outside his window in Paris during a very short period. The earth, air, and water teems with life, of which but little really is known. The cultivator, from sheer force of circumstances, becomes acquainted with most of the insects that are injurious to the plants which he cultivates, but he knows comparatively little of the myriads of beautiful insects that have work to do in the world, and are doing it almost unnoticed by us. Space will not permit me to say anything of the advantages to be derived from children being encouraged to take an interest in gardening from a utilitarian point of view, although a good deal from this standpoint could be said in its favour, and the time may perhaps come when practical horticulture may either be taught in existing schools or else special schools be established for the purpose. It appears to me certain to happen in the future, that the production of fruit and vegetables will become a more important industry than it is now.

E. HOBDAY.

NOTES FROM KEW.

Hardy Plants.—Some exquisite little Alpine Saxifrages are thriving admirably on the recently-constructed rockery in the herbaceous ground and several are finely in flower, amongst which the most noteworthy are the *Aretia*-like Saxifrage (*S. aretioides*), a charming kind, which grows in dense, hoary, cushion-like masses, and which is now bespangled with numerous bright golden blossoms, each $\frac{1}{2}$ in. across, borne on stalks $1\frac{1}{2}$ in. high; similar in appearance to the foregoing, but with white blossoms, and equally desirable is *S. valdensis*. The *Diapsia*-like Saxifrage (*S. diapsoides*) is another gem, with its silvery flowers terminating the cylindrical hard tufts of hoary leaves. *S. Rocheliana* is certainly one of the most satisfactory and easiest kinds to grow, as it rapidly spreads into large patches, which, throughout the spring, are enlivened by sparkling white flowers. *Vandell's Saxifrage* (*S. Vandellii*) is yet a rare kind in collections, but perhaps it is scarcely distinct enough from *S. Bursariana* (of which some consider it a variety) to allow of its being sought after; in habit it is apparently between *S. Bursariana* and *juniperina*, but it has the large white blossoms of the latter kind. The rare *S. flagellaris* is flowering finely, and its bright yellow blossoms, which are large for the size of the plant, are very attractive; its leaves grow in rosettes, which throw off in all directions slender runners that quickly take root, thus increasing very freely. It is remarkable also as belonging to the few flowering plants which grow at the highest latitudinal limit of vegetation, as it is found only in Arctic North America and at lofty elevations on the Rocky Mountains. The numerous kinds of Grape Hyacinth (*Muscari*) are now beginning to make an effective display in the hardy bulb collection, and amongst them are several new kinds. *M. Szovitzianum* is a very handsome sort which bears dense racemes 2 in. long of bright clear blue, sweet-scented flowers; it is a native of the north of Persia. *M. Pinardi* is another beautiful sort that bears even longer and denser racemes of blossoms than the last, but they are of a much darker hue. *M. micranthum* is apparently the smallest of all the cultivated *Muscari*, but it is none the less interesting, especially as it is the sweetest scented of them all. The best of the older kinds to be found at Kew include the lovely *M. Heldreichii*; a native of Greece

with its clear blue clusters of flowers, the minute teeth of which are pure white, thus considerably enhancing the effect. The pale-flowered form of *M. botryoides* is quite unsurpassed in point of colour; the soft sky-blue tint of the blossoms contrasts admirably with its pure white neighbour (album), and the deep purplish-blue shade of the type and the other kinds. This variety seems to be rather scarce in gardens, but it should be the aim of all hardy flower lovers to possess such a desirable plant. The Leopard's Banes (*Doronicum*) are handsome, early-flowering Composites of neat habit, and remarkably floriferous. They all have yellow flowers. The most desirable kinds are *D. austriacum*, with heart-shaped leaves and flowers 2 in. across, and *D. caucasicum*, a kind more slender in growth and with smaller flowers. The short-stemmed *Hutchinsia* (*H. brevicaulis*), an inhabitant of the Swiss Alps, is a rare Crucifer. It differs from the better-known *H. alpina* in having much shorter flower-stalks; hence it is more compact and tufted in growth. The showy Toothwort (*Dentaria digitata*) is another handsome Crucifer, which grows about 1 ft. high, and has leaves cut into five narrow segments. The flowers, which are large, are rich purple, and produced in flat racemes terminating the stem. For partially-shaded borders this fine plant is very effective. It is a native of central Europe. The Twin-leaf (*Jeffersonia diphylla*) is a very interesting and rare member of the Barberry family, its leaves being cleft into two lobes. The flowers, which are white, measure 1 in. across, and have a central tuft of yellow stamens. It strongly resembles the Bloodroot (*Sanguinaria canadensis*), another singular and pretty plant also in flower. Both are natives of North America.

Hardy Shrubs.—Few shrubs are at present more interesting than the showy Ribes (*R. speciosum*), the flowers of which resemble those of a Fuchsia in form, and the graceful drooping manner in which they are produced renders them remarkably distinct; they are bright red in colour, 1½ in. long, and are produced plentifully in succession for a considerable period. It is perfectly hardy, though a native of California and other parts of North-west America. *Rubus spectabilis* is a very showy Bramble with large wrinkled leaves, and flowers, 1 in. across, of a deep magenta tint. It inhabits shady woods near streams on the north-west coast of North America. Another handsome North American shrub is *Nuttallia cerasiformis*, which, in style of growth and flowering, is very similar to that most beautiful of all spring flowering shrubs, Ribes sanguineum; but its pendulous racemes of blossoms are white. *Prunus triloba*, a handsome Rosaceous shrub from China, is an object of much beauty at the present time, being literally covered with lovely rosettes of double blossoms, varying in colour from almost white to deep pink.

Greenhouse Plants.—On entering the east door of the Temperate House a large plant of *Holboellia latifolia*, from the Himalayas, covered with a profusion of blossoms, attracts attention on account of the delicious odour which they exhale; they hang in clusters amidst deep evergreen foliage, but, in point of colour, they are somewhat inconspicuous, the pollen-bearing flowers being pale green and the seed-bearing ones of a livid purple hue. It is, however, a most desirable climber for adorning the roofs of conservatories. Amongst Himalayan Rhododendrons may be noted *R. campylocarpum*, a kind which has deep crimson, funnel-shaped blossoms, conspicuously spotted with black. The hybrid variety Princess Alice is another beautiful kind, which has large white flowers. Though surrounded by a host of handsome garden varieties, the old *Camellia reticulata* is worthy of note; its huge rosy blossoms, with bright golden centres, are very attractive. The variegated-leaved variety of the old *Kerria japonica* is one of the most pleasing shrubs imaginable, and, when studded with a profusion of orange-coloured blossoms, it is highly ornamental. It is perfectly hardy, having withstood the past winter with impunity, but its variegation appears to be shown to better advantage under glass than out-of-doors.

Stove Plants.—The greatest ornaments among the smaller subjects in the Palm house are two East Indian *Eranthemums*, which, on account of their remarkable beauty, should be in general cultivation. In style of growth they are similar to Plumbago, and produce their blossoms in the same long, one-sided, raceme-like manner. *E. cinnabarinum* is the finest. It has ovate leaves and blossoms 1 in. across, of a rich violet tint with a darker blotch in the centre of the upper petal. *E. purpurascens* has narrower leaves than the last, and rather smaller flowers. A variety of the old favourite *Justicia carnea*, named *superba*, shows an improvement on the original both in point of colour and size of blossom. *Burchellia capensis* is noteworthy on account of the reddish-orange colour of its tubular flowers, which are collected at the tips of the stems in dense clusters. Belonging to the same family is the *Gardenia florida*, which, in its double form, is so highly esteemed on account of its perfume. One would hardly imagine that the original plant was the parent of that which bears such large double flowers, as in the original plant they are small, and the corolla is four-cleft. Such a change shows

what skilful culture may effect in course of time. A very handsome form of *Crimum australe*, named *canaliculatum*, is a very conspicuous object; it has stately, broad foliage, and bears huge umbels of pure white flowers, 4 in. to 6 in. across, which are sweetly scented. It is a matter of regret that the exquisite beauty of the South American *Cypellus* should be so fleeting, as they present a striking feature when in perfection. *C. gracilis*, an Iris-like plant, has branching stems that bear blossoms 3 in. across; their outer petals are pure white, while the inner ones are of a rich indigo-blue shade, and the lower ones are elegantly barred with brown. It is a native of Brazil.

W.

NOTES OF THE WEEK.

Schomburgkia tibicinis at Kew.—The flowering of this, the very handsome Cow's-horn Orchis of Honduras, is an event not to be overlooked by Orchid lovers, not only on account of its shy-flowering propensity, but also for the rare beauty of its blossoms, which are undoubtedly the finest in the genus. The stems, which grow from 12 in. to 18 in. high, are about the size and have the same peculiar curve that a cow's horn has; they are, too, as hollow and smooth inside as a Bamboo, and are used as trumpets by Indian children in Honduras; hence the origin of its specific name. At the base of each stem there is also invariably a small hole leading to the interior, which furnishes access to colonies of ants, which infest the plant in its native habitat. The leaves are from two to four in number, terminating the stems, and are large, oblong, and leathery in texture. From between these the flower-stem rises several feet high, though in the Kew specimen it measures but 3 ft., and bears from six to a dozen blossoms, 2½ in. across. The wavy-edged sepals are of a deep rose colour, speckled with white on the outside and rich chocolate-red within. The lip is sandal-shaped, deep rose outside, pale within, and pencilled with chocolate-red streaks. The whole flower is of very firm texture, and under favourable conditions lasts in perfection for several weeks.—W. G.

Dendrobium barbatulum.—The more we see of this charming Orchid the more we are convinced that eventually, when it becomes better known and less rare, it will prove to be among the most valuable of this beautiful family, especially for cutting purposes, for which the arrangement of its pure white blossoms admirably adapts it, as they are borne in dense racemes on slender gracefully arching stalks from the tips of almost every stem. Like most other Orchids, the flowers are variable in point of size and form; in some they are only 1½ in. across, with broad segments and an almost heart-shaped lip, and a faint blush tint may be detected in them; in others they are larger, with the segments much narrower and the lip extremely so, and of the purest white, with nothing to mar its chaste beauty except the golden hairy fringe at the base of the lip. For its free-flowering tendency and the length of time during which it continues in perfection, and flowering, as it does, at a time when the majority of Orchids are on the wane, we should consider it invaluable for growing for market purposes, and doubtless those concerned in that direction will ere long avail themselves of it, if they have not done so already. The very effective display made by this Orchid alone now in the Orchid house at Kew is quite sufficient to recommend it.—W. G.

Azalea Einpress of India.—We have received from Mr. A. Van Geert, Ghent, a coloured illustration of this new double-flowered Indian Azalea, the blooms of which are as remarkable for size as for their striking colours, which are rosy salmon spotted and boldly edged with white. At the International Show held at Ghent in April last year, this Azalea obtained a first prize under the provisional name of "Héros des Flandres," and on the 11th March last it obtained a first-class certificate at South Kensington. It is compact in habit, a free flowerer, and will certainly make a first-class plant both for market and exhibition purposes.

Hardy Flowers at Eastcott.—The sharp frosts, heavy showers, and snowstorms of last week have together severely affected herbaceous and rock plants, but the following are in full flower and uninjured, notwithstanding the weather, viz., *Muscari botryoides album* and *ceruleum*, *Fuschkinia libanotica*, *Primula nivalis*, *Narcissus bicolor* Horsfieldi, *Anemone fulgens*, *Gentiana verna*, *Hutchinsia alpina*, *Saxifraga*, *Epimedium*, *Androsace*, *Omphalodes verna*, and *Draba*.—A. K., Eastcott Cottage, Pinner.

Crystal Palace.—We regret to learn that Mr. George Thomson, the very capable superintendent of the Crystal Palace Gardens, has resigned his situation in that establishment. Those who have seen how well he has managed all departments of the gardens there with a very much reduced staff will regret that and wish Mr. Thomson a fitting sphere for the exercise of his abilities.

Rhododendron Nuttallii.—I have now in my winter garden a plant of this *Rhododendron* bearing thirteen trusses, each consisting of from five to seven flowers. The largest truss is 13½ in. in diameter, and the single flowers are large in proportion. The plant, a seedling from the first that flowered in Europe, is comparatively young, and proves that this superb *Rhododendron* is not a shy bloomer, though generally supposed to be so.—O. F., *Augsburg, Bavaria.*

Mr. W. GOLDBRING, for some years Superintendent of the Herbaceous and Alpine Department of the Royal Botanic Gardens at Kew, has resigned that position, and joined the staff of THE GARDEN.

THE INDOOR GARDEN.

TREE FERNS AND ORCHIDS.

EPHYTAL Orchids and Tree Ferns are found as co-partners in the forests of both hemispheres, and the latter are especially beautiful as seen in the form of groves besides streams, on mountains, or on hill-



Tree Ferns, Bromeliads, and Orchids.

sides in the Tropics. In the East, some species having stems from 20 ft. to 30 ft. in height are not uncommon, and they may be readily distinguished from all other types of vegetation, not only by their form, but by the delicate tints of fresh green colour which their ample fronds possess. The finest of all Tree Ferns in size are doubtless the *Dicksonias* of Australasia, but in grace of frond and slender-stemmed elegance of port, some of the Eastern species far surpass them. Naturally they exist in groves, and the charms which they possess when so seen is due to their variable size and the curious positions in which they grow. Here they root into the earth, and their great umbrellas of plummy fronds are borne aloft on the straightest of stems. I have seen a little colony growing on a large sandstone rock, their masses of black hair-like roots forming a perfect mat of fibres over the surface of the mossy stone, while close by were a pair of specimens which had rooted on a large tree trunk 20 ft. above the ground level. The spores had germinated there, and it was curious to see the way in which their stems were curved, so as to allow room for their spreading

plumes. Tropical forests are, however, monotonous in effect after a little acquaintance with them; their tints are less variable than those of our own woods, and if any strikingly beautiful views be obtained in them, one is almost sure to find the effect due either to groves of Bamboo or Tree Ferns in the foreground or middle distance. Although generally found in wet, or, at least, moist and shady places, still Tree Ferns will not unfrequently flourish in full sunshine, nor do their fronds suffer, as is the case sometimes at home, especially when the soil in which they grow is allowed to become too dry. Naturally, their roots can ramble about under Moss and stones or tree roots, and very often they reach the water near them, and so can defy the power of even a tropical sun. Moreover, a mass of dead leaves and other *debris* is sure to congregate around the base of their stems, and so the roots are always comparatively cool and moist. Tree Ferns at home suffer not so much, however, from dryness at the root as that of their stems, and in order to remedy this some wrap *Sphagnum Moss* around them, while others syringe them two or three times a day. What one most admires in a tropical forest is the utter abandon of Fern and Orchid beauty, as seen amongst the branches of Moss and climber-draped trees. In the East this is especially so, and in South America the Orchids have often to fight their battle of life with epiphytall Bromeliads of many kinds, some of which are quite as beautiful as their more fashionable neighbours. We generally try to meet the wants of epiphytall Orchids by growing them on blocks in our Orchid houses, but in the case of the majority of epiphytall Bromeliads we give them ordinary pot culture, and they simply have to make the best of it. In Stevens' auction rooms the other day, however, a plant of the beautiful *Odontoglossum vexillarium* and others of O. Alexandre were pointed out to me, which had been potted in ordinary garden earth, just as an artisan would pot a *Fuchsia*, and yet singularly enough both species had made larger bulbs and leaves than those of the previous year. In their wild state one may often find both Orchids and Tree Ferns growing in stiff yellow loam, sometimes in clay itself surfaced with sandstone grit, and if peat earth be found it is generally accompanied by dwarf and scrubby vegetation there as at home. Of course, peat has its specific value for Heaths and similar plants, but for strong-growing Orchids and Tree Ferns a trial of rough fibrous loam is much to be desired. That *Cypripediums* and *Cymbidium* will succeed in fibrous loam, from which the small earthy particles have been sifted, is a well-known fact, and I am convinced that many *Celogynes* and semi-terrestrial Orchids generally may be grown in a well-drained compost of fibrous loam, leaf-mould, and coarse sand with perfect success. The accompanying illustration gives one an excellent glimpse of the graceful contour of Tree Fern fronds, as seen spreading above a tangled group of Bromeliads and long-bulbed epiphytall Orchids in their native habitats. The drooping character of the dead fronds is very faithfully rendered by the artist, as are also the chaffy and paleaceous bases of the large stipules; indeed, the sketch may be taken as an example of how readily a few judicious touches with the pencil on 1 or 2 square inches of boxwood may be made to give one an idea of graceful vegetation, and to define different classes of plants with almost photographic accuracy. B.

CONSERVATORY CLIMBERS.

Tacsonias.—Nothing adds so much to the ornamentation of a conservatory as climbers, among which there are now some very fine plants, the most recent introduction of note being *Tacsonia exoniensis*, a hybrid between *T. mollissima* and *T. Von Volxemi*. In habit it is intermediate between the two parents, and the flowers partake in about the same degree of the character and colour of both of them. This *Tacsonia* is both beautiful and a remarkably free grower. The only drawback to climbers of this class is their liability to scale, which clings so tenaciously to the bark, that it is not an easy matter to destroy or dislodge it. In appearance these pests are not unlike small splashes of whitewash, and are to look at just as inanimate, for one can never detect any movement in them with the naked eye, and yet somehow or other they manage to spread at a great rate, and soon cover the entire bark of the stem from one end to the other if undisturbed. In order to get rid of scale, the first thing is to prune out all that can be spared, which in most cases will be the entire shoots made last summer, as, like most climbers, *Tacsonias* flower on the young wood; the object, therefore, should be to make way for this, and give it all the encouragement possible. To remove the scale, a solution of Fowler's Insecticide is as good as anything, which, used in the proportion of five ounces to a gallon of soft water, and well rubbed in with a brush, so as to wet the whole, is sure destruction to the insects. In growing and training these *Tacsonias*, there is no way in which they do so well, or show themselves off to such advantage, as when run up to the roof and allowed to depend therefrom, very much in their own natural manner, except, of course, that they should not be allowed to grow wild and become

an entangled mass, but thinned out, and not tied formally or at all if it can be avoided, as then they droop gracefully down, furnished with their trumpet-shaped blossoms, and look quite at home. The soil in which they do best is a fibry loam cut from an old pasture, and the fresher it is used the more they like it, besides which, it lasts in an open condition longer, and is therefore more desirable on that account. In order to grow these and other climbers well, and keep them in a vigorous, healthy state for a lengthened period, it is necessary that they have plenty of root room, such as is afforded by a good border, for although they may be grown in large pots or boxes for a time, they never attain that degree of strength or flower so freely as they do under more liberal treatment. One climber, however, is an exception to this, and that is

Tecoma jasminoides, which requires pinching in order to check any undue redundancy of growth, and cause a ripening and hardening of the long, twining shoots it forms, without which the blooms are few and far between; but when restricted and fully exposed to the influence of sun and light, it is one of the most useful and ornamental conservatory climbers that can be had, as it is a fine evergreen, with foliage that never looks shabby or becomes infested with insects.

Passifloras.—Of these, all the greenhouse kinds are very desirable, resembling in habit the *Tacsonias*, with which they associate well and form most elegant roof garniture. Another great thing in favour of the *Passion* flowers is that they are quite proof against insects, for, although I have had to do with them for a great number of years in houses where others do not escape for long, I never knew any of them affected, and this immunity renders them doubly valuable for planting in situations where they cannot well be got at. The treatment requisite for them is much the same as that recommended for the *Tacsonias*, so far as pruning and training are concerned, but, being remarkably free in the way of growth, almost any soil will suit them, so long as they receive plenty of water, of which, if properly drained, they cannot have too much during the three summer months. The sorts best adapted for conservatory decoration are *P. racemosa corulea*, *P. Mayana*, *P. Colvilli*, and *P. Count Kisselkeff*; the first of these is nearly hardy.

Mandevilla suaveolens.—Were it not for being deciduous and so subject to green fly when making its young growth, *Mandevilla suaveolens* would be much prized as a climber, on account of its pure white, Convolvulus-shaped flowers that are borne in such profusion, but, unless it can be fumigated, it is useless attempting its culture, and as conservatories generally adjoin the dwelling-house, it is not easy to do this without creating a nuisance.

The Lapagerias.—For a shady, damp wall, where a trellis can be placed, or some wires strained vertically, or for a low structure not much exposed to the sun's rays, nothing can equal the *Lapagerias*, the red and white varieties of which grown so as to intermingle together have a most charming effect, the one helping to set off the beauties of the other to advantage. I have heard many complaints of the great difficulty experienced in getting plants of these *Lapagerias* to start and do well, a failing generally owing to a want of proper preparation of the border in which they are grown, as when this is suitably made, they start away with great freedom, and soon become thoroughly established. Requiring, as they do, immense quantities of water when flowering and making their growth, it is a matter of the greatest importance that plenty of drainage should be provided, otherwise the soil loses its healthy texture, and is rendered sour and inert, a condition that is highly unfavourable to the roots. Soft red brick broken in pieces about the size of Walnuts is as good as anything to drain with; 6 in. of this will not be any too much, and if on these some sods of peat are laid at starting they will keep the interstices clear for years after. In the filling up of the remaining space, which should not be less in depth than from 18 in. to 2 ft., the same kind of material should be used, only chopped up a little, as it cannot well be too rough, and to keep it open and porous a good sprinkling of silver sand is necessary. In this mixture I have found *Lapagerias* to thrive well. They are somewhat difficult to move or interfere with, unless it be done just as they are commencing their growth, as at that season, if they are well watered and kept syringed for a time, they may be transplanted with safety. In turning them out of their pots, it is always advisable to remove as much of the old ball as can be done fairly, so as to disengage their roots, which are then at liberty to take possession of the new soil, and, this being fresh to them, they lay hold of it with avidity. The great thing is to begin with good, healthy plants, which, though they cost a little more, are the cheapest and best in the end. They can only be raised from layers or cuttings to be depended on to come true to name. Unfortunately, slugs have a great partiality for the young shoots. A battery, made by means of a strip of zinc and copper, the two metals being brought in contact, forms a safeguard if placed around the collar of the plant, and a broken lamp glass is a good protection for any young shoot that may be just making its appearance aboveground. Those who may be desirous of increasing

their stock of *Lapagerias* will find this to be a good time for layering; to get them to root, all that is needful is to bury the stem of the shoot about 3 in. deep, and allow the branches or points leading from it to have their tips out so as to keep up a circulation and maintain life in the whole. The hardness of these magnificent climbers is such that they will succeed in any house from which frost is excluded, and the damper and cooler the atmosphere the better it suits them.

Rhynchospermum jasminoides.—For clothing pillars nothing is better adapted than this, and it is a plant that bears pruning well, and will readily conform to any method of training that may be necessary to cover the space allotted to it. Exposed fully to light and sunshine, so as to ripen its growth, it flowers with great freedom, and, being so sweet-scented, it quite fills a large house with its odour. Either loam or peat, or a mixture of the two, suits it, as it is not at all particular as regards soil, but does best in that in which there is plenty of grit, and it should be made firm, as compression induces a short, sturdy growth and a more floriferous habit.

Habrothamnus elegans.—For covering a large breadth of wall, where it can be trained flat and allowed to form breast wood, *Habrothamnus elegans* is a grand plant, bearing, as it does, long racemes of tubular blooms that hang down from the ends of each shoot in a most graceful manner. In a house kept somewhat warm, and planted out where it can have plenty of root-room, it flowers almost continuously the whole year round. To aid it in doing so, all that is necessary is to remove the spent growth and keep the plant supplied with a little liquid manure at each alternate watering or so. Being of rather a gross feeding habit, the border intended for it should consist of rich soil, such as good fibry loam, the turfy sods of which, chopped up roughly, soon help to push it along.

Jasminum gracile is likewise a capital plant for the same purpose, and one which rapidly fills a large panel; or it may be run up into the roof and used as a climber. The foliage of this *Jasmine* is about the size of that of a *Myrtle*, but much thinner, and the flowers are small, white, and star-shaped, hanging in clusters, and strongly scented. S. D.

THE COFFEE SHRUB.

At the present day the coffee shrub is cultivated throughout the Tropics, but its native country is the mountainous regions at the extreme north-west point of Abyssinia, the word *Coffee* being derived from Caffa, the name of one of the provinces of that country. From Abyssinia the *Coffee* was first introduced into Arabia by the Arabs, and cultivated in Yemen, or Arabia Felix, as it was anciently called, and for upwards of two centuries Arabia supplied all the *Coffee* then used. Towards the end of the seventeenth century, however, the Dutch succeeded in transporting it to Batavia, and from thence a plant was sent to the Botanic Garden at Amsterdam, where it was propagated, and in 1714 one was presented to Louis XIV. The credit of introducing the *Coffee* shrub into the Western Hemisphere is a disputed point. One story asserts that the French introduced it into Martinique in 1717, while, on the other hand, the Dutch are said to have previously taken it to Surinam. In either case it is certain that we are indebted to the progeny of a single plant for all the *Coffee* now imported from Brazil and the West Indies.

This above short but explicit account was written by the late Mr. Alexander Smith, the first curator of the Economic Museums at Kew. Like that of many other beverages and forms of vegetable food, the first account of the use of *Coffee* is lost in obscurity, and wherever it has been introduced, it has always at first met with much opposition. Until quite recently the best *Coffee* came from Mocha by way of Aden, but now the methods of preparing the berry are so much improved both in Ceylon and elsewhere, that Mocha *Coffee* has nearly lost its once high character. The plant producing this grateful beverage is a glossy-leaved shrub, nearly allied to *Ixora* and *Cinchona*; it attains a height of 10 ft. or more, and the part used is the seeds or "beans," two of which are produced by a red berry nearly as large as a cherry, the berries being preceded by white flowers clustered in the axils of the leaves. Until quite recently only one species (*Coffea arabica*) was generally cultivated as yielding *Coffee*, but now another larger growing and more productive kind (*C. liberica*) is being planted in Ceylon and elsewhere in Eastern plantations. Apart from its larger berry and greater productiveness, however, the new plant is said to be amenable to successful cultivation at a lower altitude than is possible with *C. arabica*, so that much land below 1400 ft. may now become available for *Coffee* culture, which, previous to the introduction of the Liberian variety, had to be employed for the growth of less productive crops. A great drawback to successful *Coffee* culture in Ceylon of recent years has been a peculiarly subtle and destructive leaf disease, the only effective remedy for which is plentifully manuring the land. Again, plantations have become worn out, and virgin land is not now so readily attain-

able as formerly, hence we find pioneers out all over the Malayan archipelago prospecting for suitable Coffee estates. Already plantations have been commenced in Perak, and also in Lahore, the mainland immediately behind the town of Singapore, and the most satisfactory accounts have been published of the suitability of the highlands of North Borneo for this particular industry. In Malacca, Sumatra, Borneo, Java, and the Philippines the Coffee shrub is found around the native huts, where it exists and affords a moderate supply of berries without any especial system of culture; but, for its profitable growth as a sale product, not only is the best of red loamy soil—if with boulders and Bamboo clumps in moderation, so much the better—required, but the culture and preparation are laborious throughout, and bad weather during the harvesting and drying of the crop often, by damaging the produce, lowers the profits considerably. Unless systematically cultivated, the crop produced is a straggling one, and thus much labour in collecting the berries is wasted; hence, one great object in the cultivation of the Coffee shrub is to obtain a simultaneous crop. The berries are gathered when ripe, and a pulping machine through which they are passed removes the outer coat, after which they are immersed in water vats for twenty-four hours to

nor ground at all until wanted, if it can possibly be avoided. The leaves as well as the berries contain caffeine, which is the essential principle of this product as a beverage, and in Sumatra the natives of some localities prefer an infusion of the leaves to that of berries prepared in the usual way. Its value as a beverage depends on its two-fold action, as a soothing of the vascular system, while it acts as a stimulant to the brain, and its value as food is negative rather than otherwise, since it prevents undue waste of tissue rather than actually affords any nutriment to the body.

Brazil, and Ceylon, and British India, have hitherto been the great Coffee-producing countries. In 1875 the total imports were 1,589,732 cwt., of which 750,055 cwt., of the value of £3,743,055, were from Ceylon; in the same year from Brazil 222,375 cwt. were imported, of the value of £961,470; from Aden the imports were 15,058 cwt., of the value of £78,991; while British India sent 148,476 cwt., valued at £765,534. It is singular to notice that whereas in 1871 large imports of Coffee came to this country from Mauritius and the Cape of Good Hope, the supply fell to almost nothing in 1875, but whether owing to the failure of the crop through disease, or the discovery of other markets, or the introduction of a more profitable branch of culture, we are unable to say.

It may be interesting to some to learn that Coffee, as a beverage, was introduced into Arabia about the commencement of the fifteenth century, and soon superseded a drink previously prepared from the leaves of the Kât plant (*Catha edulis*). In Constantinople Coffee was first used about the middle of the following century, and in 1632 the first Coffee house was opened in London, and the popularity to which Coffee houses rose in after years is a well-known matter of history. B.

PANDANUSES, OR SCREW PINES.

AMONG the many ornamental-foliaged plants useful for general decorative purposes, the Screw Pines, or Pandanuses, take high rank, being alike remarkable for their singular habit and the peculiar gracefulness of their foliage. When young, they form handsome objects for dinner-table decoration, associated with such *Dracenas* as *D. Cooperi*, or others having recurring leaves. One of the most useful for this purpose is *P. javanicus variegatus*, the foliage of which is beautifully striped with creamy-white bands that contrast well with the lustrous green running between them. What renders this particular kind of such value where glass accommodation is limited is that, unlike some others of more recent introduction, it may be kept long in a small state by simply confining the roots; but, when this is done, to keep it in health it must have abundant supplies of water, or the leaves soon assume a sickly hue and become infested with scale, an insect to which all the Pandanuses are more or less subject. Although this variety admits of being restricted, it grows rapidly if well treated, and in two or three years may be got to the size of a large specimen for exhibition or conservatory embellishment, where, if previously hardened, it will stand well for two or three months during the height of the summer.

When required for either of these purposes, the best way is to give a good shift early in spring, and place it at the warm end of the stove, where it can obtain plenty of sun and light, in which position, once it gets hold of the fresh soil, its growth will be rapid. The leaves being of a gracefully pendulous nature, the plant should be elevated, in order that the tips may not touch the stage on which the plants stand, or suffer injury by being smothered up by others surrounding it. Raised on an inverted pot, this will not happen, and the base will become better furnished than it otherwise would be. *P. javanicus variegatus* is not, however, so difficult to manage in this respect as some of the others, owing to the free way in which it forms suckers, which, if not taken off, cluster closely around the bottom and make quite a thicket. These are the parts to get for propagation, and any of them taken off carefully with a heel without being bruised will strike, if plunged in strong bottom-heat. To prevent losing them from decay, the ragged end should be trimmed with a sharp knife and left a short time to dry before being inserted in sandy soil in 3-in. or 4-in. pots. If this be tolerably moist, they will not require water for a week or two, as the drier they are kept without flagging, the more likely will they be to root. Why many fail in striking Pandanuses and plants of that class is in placing them where they get syringed, as, owing to the formation of the leaves, they are receptacles for water, which, unless the plants are turned upside down, stand in them till the tender parts are destroyed. To insure safety, therefore, they should be attended to in this way once or twice a week till roots are formed, after which, as growth progresses, they are not so susceptible of injury.

Another exceedingly ornamental Pandanus is *P. Veitchii*, a handsome kind, partaking somewhat of the character of the one already named, but it is of bolder habit, has broader leaves, and is well suited for occupying a vase in a prominent position. Where space can be



Coffee Shrub in Fruit.

clear them of mucilage and other useless matter. They are then dried and passed through another machine or mill, which removes their parchment-like coats. The berries are now in the Bean-like form so well known to us, and are dried well and packed in barrels for exportation. The roasting process enlarges the bulk of the bean, but it loses in weight to the extent of one-fifth or even more by the process, and its chemical nature is also essentially changed, since, by the action of heat, are developed the volatile oils and aroma to which the flavour is mostly due. On careful roasting its value as a beverage much depends, and this is the principal reason why the French and Italians—to say nothing of the Turks, who were the first to use the beverage in Europe—excel us in its preparation, since they are careful to roast their Coffee immediately before it is required for use, and so the perfection of flavour is obtained in all its pristine freshness. Freshly-ground Coffee is a great absorbent; indeed, in this way it forms one of the best of disinfectants; hence it will be evident that Coffee, after being roasted and ground for use, should be carefully preserved from contact with the air, or germs of disease may thus unwittingly be imbibed. Indeed, Coffee should neither be roasted

afforded it, *P. utilis* forms a grand-looking object, as it has leaves quite 2 in. wide, and from 3 ft. to 4 ft. long, which, with their red spines, have a striking effect. The twist or screw in the stem of this is very marked after a year or two's growth, the axils of the leaves being arranged in regular spiral whorls, as is also the case with most of the others. *P. elegantissima* is, as its specific name implies, a very elegant variety, the habit of which is dwarf and bushy, and the plant altogether one of the best adapted for use in rooms or windows during the summer.

One great advantage in growing any of these *Pandanus*es is that they are not, like the generality of stove plants, tender, requiring much care and good management to have them in proper condition, as, under anything like fair treatment, they always thrive and look well, and are available for use at any time during the year. The only thing to avoid when they are wanted for table decoration is not to let them stand about in cold places, or keep them out of heat, for, although more enduring than others that have soft, fleshy leaves, the roots get chilled, and when this takes place, the edges of the foliage are apt to become discoloured, which greatly detracts from their appearance. In order to keep them well furnished, it is a good plan when potting to drop the ball a little lower at each shift, as then it not only brings the foliage nearer the pot, but gives the plants a chance to root afresh round the collar, which they readily do.

*Pandanus*es will succeed in almost any soil if plenty of water be given, but that which brings out the variegation better than any other is such as is poor and that contains plenty of sand. This, with either peat or loam, suits them well, and allows the large roots to ramify freely. S. D.

DOUBLE-FLOWED IVY-LEAVED PELARGONIUMS GROWN FOR TRIAL AT CHISWICK.

By A. F. BARRON.

The introduction of M. Liebmann's double-flowered form of the Ivy-leaved Pelargonium, König Albert, some few years ago was a pleasant surprise, being the commencement of a new class of highly ornamental plants which are exceedingly suitable for the decoration of the conservatory and also for cut flowers. The elegant and chaste forms of the single-flowered varieties of the Ivy-leaved Pelargonium bear no comparison in point of appearance with the new double-flowered varieties for which we are mostly indebted to that very skilful hybridist, M. Lemoine, of Nancy. These new double-flowered varieties all belong to the true petatum or trailing species, and are of various shades of colour, from almost pure white to dark lilac.

The following received first-class certificates :—

A. F. BARRON (Lemoine).—Flowers large and very double, of a pale rosy-lilac colour, with dark veins on the upper petals; produces a large truss. A very fine variety. Flowers of the largest and finest forms.

ELFRIDA (Ebert).—Flowers large; dark lilac, shaded with purple; of fine form. Trusses of medium size. Very free flowering. A pleasing lively-coloured variety.

LUCIE LEMOINE (Lemoine).—Flowers large; rather loose; of a very pale lilac colour, with dark veins on the upper petals. Free flowering.

MADMOISELLE ADRIENNE BARAT (Lemoine).—Flowers large and very double, pale lilac. Very free flowering and fine habit.

SARAH BERNHARDT (Lemoine).—Flowers almost white, the upper petals veined and tinged with lilac. Free flowering. Robust growth.

VISCOUNTESS CRANBROOK (Lemoine).—Flowers large and full, white, shaded with rosy-lilac colour. A pretty variety. Free flowering.

Classification of Varieties according to Colour.

FLOWERS WHITE OR VERY PALE LILAC.—Lucie Lemoine, Madame Emilie Galle, Sarah Bernhardt, Renoncie, and Viscountess Cranbrook.

FLOWERS PALE LILAC.—A. F. Barron, La Fiancée, and Mademoiselle Adrienne Barat.

FLOWERS DARK LILAC.—Elfrida, Madame Perle, and König Albert.—"Royal Horticultural Society's Journal."

Begonia multiflora.—This is, without doubt, one of the best of *Begonias*, combining, as it does, in one plant all the good properties of both the flowering and fine-foliaged section. In growth it is dwarf and compact; the foliage is very ornamental, and, even in the case of the smallest plants, from the axil of every leaf is produced a bunch of beautiful flowers nearly large enough to hide the leaves, and they remain in perfection for a very long period. For furnishing stands or baskets I do not know any plant to excel it.—J. GROOM, *Linton*.

Hoya bella in a Cool Vinery.—A correspondent in last week's GARDEN says (p. 311) that "*Hoya bella* can be grown up as a stove plant." This remark may prevent some from cultivating this very fragrant and beautiful plant. I have had specimens of it for several years in full perfection in a cool Vinery planted in peat, and sparingly watered through the winter.—H. A. H.

Rhynchospermum jasminoides Hardy in Devon.—I have had this planted out against a south-east wall, and even during the past severe winter, with the protection of only a single Laurel branch, it has stood quite uninjured by the frost, while on each side of it *Philadelphus mexicanus*, *Eccremocarpus scaber*, *Ceanothus punicus*, *Habrothamnus*, and even *Passiflora corollæ* were either killed or cut to the ground.—H. A. H., *South Devon*.

THE FRUIT GARDEN.

GOLDEN CHAMPION GRAPE NEAR BRISTOL.

In reply to "J. S. W.'s" remarks (p. 324) on this subject, allow me to state that I mentioned the Vine in question because the Grapes produced on it are well known to be unusually excellent. I may also add that Bristol and its neighbourhood this winter have been little different, as regards the severity of the frost, from the greater portion of the kingdom; therefore what holds good in practice in the one place will hold good in others under like conditions. The Vine just named was started in January, and was just approaching the flowering stage at the time which I mentioned. At the time when it was started the soil was at its lowest temperature, and if it were necessary to have an equal root and top temperature for Vines started in November, it is also the same if started in January, or even later. "J. S. W." cannot escape the logical consequences of his line of argument in this direction. I have had to do with a good many Vines in my time, and have seen a good many more, but it is news to hear, as "J. S. W." states, that Vines advanced so far as this in the middle of March will only ripen their fruit in time for the autumn shows. But in discussing this subject, "J. S. W." occasionally makes admissions that seriously damage the views which he strives to establish; he refers to his Vines in a bleak district of Yorkshire, that without a particle of protection on the border were on the 5th of April showing magnificent shoots and bunches. Now these Vines must have been started in the beginning of March, or earlier; up to March we scarcely had a glimpse of sun, and at the end of February, by testing the earth's temperature, I found that it had not risen perceptibly; and again, on the 16th of March it was only 4° higher than in January. "J. S. W.'s" Vines are about as strong evidence against all he has written on the subject as could well be adduced. He speaks of examples of cold roots and warm tops being few and ill to find. If he had occasion to move about the country as much as I have, he would see plenty. Not more than three miles from where I now write I could show him a couple of instances, both cases in which the produce is sold in Covent Garden Market. In one the crop is fast colouring, and will be all sold by the middle of May. The Vines are Black Hamburgs and Buckland Sweetwater planted in the usual way just inside the front wall, with all their roots outside, and not a vestige of anything has been over them except about 6 in. of litter on some 6 ft. of space up to the front wall. In the other place the crop is about stoning, with the roots in a like position, but not in any way more protected; and this is how they are treated year after year, as I can testify, and the soil is as heavy, cold, and retentive as it well could be. The growers are men who have for a quarter of a century been engaged in Grape forcing, with the strongest of all incentives—competition in the market—to treat their Vines in a way in which they will produce the most money; and in this they are successful, as no better early Grapes reach Covent Garden.

I have a letter before me from a friend in the north of Yorkshire who regularly begins to cut Grapes early in May. He writes: "I have the best crop this year that I ever had, although I was not in a position to obtain protecting material until most of the summer warmth had escaped from the soil, and then I had only a thin covering to throw off the rain and snow-water. Some 2½ ft. of snow have fallen altogether during the winter." The severe winter we have passed through has been unfortunate for "J. S. W.'s" ideas about the necessity for warming the roots of forced Vines, as, from what has come within my own knowledge, the discussion that has taken place on the subject has induced many who have hitherto followed the practice to test its value by dispensing with all but protection; and they are so far satisfied with the results that the fermenting heap with them will henceforth be a thing of the past.

T. BAINES.

GLANDS IN PEACH LEAVES.

To the naked eye these look like mere warty excrescences on the stem and base of the leaf; but that they are there for some useful purpose there can be no doubt; my own opinion is that they serve as reservoirs of food for the leaves, and that this is the case is proved by the fact that glandless-leaved varieties are, as a rule, very subject to



Fig. 1.

mildew; for instance, the following glandless kinds, viz., Royal George, Early York, Noblesse, Early Newington, and Sulhamstead, are all notoriously subject to attacks of mildew. There are three types of foliage in the Peach, as will be seen by reference to the



Fig. 2.



Fig. 3.

annexed illustrations:—Fig. 1 is glandless, fig. 2 shows kidney-shaped glands, and fig. 3 round glands. Of course, it is not claimed for the two latter types that they are entirely exempt from liability to the attacks of mildew, but their liability to it is not great in comparison with glandless kinds. W. W.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Naming Fruit Trees.—This is a subject that has been, and still is, very much neglected, but that such should be the case is to be regretted when we consider how much more interesting and convenient it is to have correct names for all our fruits. As Peaches and Nectarines are oftener found grown and exhibited under wrong names than most other fruits, a few words in reference to these, while the trees are in bloom, may not be out of place. It frequently happens that when one enters a new situation no names are found attached to any of the fruit trees, and to get their correct names is no easy task. I have frequently had, even from nurseries, Noblesse for Royal George, Violette Hâtive for Noblesse, and so on; but, with the help of books, I have generally managed to put things straight. Now, as I have said, is the time to take the matter in hand. In the first place, carefully note down the size, shape, and colour of the bloom, then in a few weeks, when the leaves are fully developed, note down the size and shape of the leaf, whether glandless or if with glands, whether the latter be round or kidney-shaped; then, when the fruit is ripe, note the size, shape, and colour of that and the exact date of ripening. One more item remains, and that is, to know whether the fruit is a freestone or a clingstone, and the size and shape of the stone. All these things being carefully noted by the aid of the "Fruit Manual," or Scott's "Orchardist," I dare ven-

ture to say that the correct name of the fruit in nine cases out of ten will be ascertained. The names of Apples, Pears, and all other fruits may also be discovered by careful observation in the same way. —H. HARRIS, *Denne Park*.

Grape Culture in Market Gardens.—"J. S. W." (p. 325) furnishes some interesting remarks regarding rapid returns from young Vines; no one would question the capability of young rods in vigorous health to finish off a good crop the second season of their existence. But the statement that good crops have been produced the first season, or in nine or ten months from the time when the eyes were inserted, is certainly something new in Grape culture. "J. S. W." says this feat is not likely to be surpassed, but if it has been accomplished once, there is no reason why it should not become, at least, an established practice. I have myself been satisfied if I could get well-ripened canes in one season's growth, and fruit early the next or within 15 months from the time when the eyes were inserted. The Vine requires a certain period for active growth, and, accommodating as it is in regard to rest, it must, nevertheless, have a period of rest before it is actively started for producing a crop. Therefore, I think "J. S. W." should give us a detailed account of how a crop of Grapes may be harvested from Vines raised from single eyes in nine or ten months. —J. GROOM, *Linton*.

Pruning Apples and Pears.—Having grown on for several years from what is called the maiden state a number of Apple and Pear trees in the pyramid form, and adopted, year after year, the common practice of shortening back the previous summer's growth, I have at length found that this form of pruning after the first few years becomes a mistake, and simply leads to the production of wood and no fruit. The tree is so much employed in making good the amputations of the preceding winter, that it is unable to perform the work of producing fruit-bearing buds, and thus every season's growth simply results in waste. Having abandoned the cutting-back practice altogether last autumn, and contented myself with the taking out of all superfluous growth, I now find in looking over the trees that in large numbers of them almost the only fruit-buds are at the extremities of the very wood that, under the hard-pruning practice, would have been cut away. Here begins the first prospect of fruit, and once the energies of the trees are directed into that channel, instead of the production of rank, barren growth, crops from year to year will be assured. There is one valuable feature in this habit of fruiting at the extremity of the previous season's growth, and that is, the weight of the fruit causes the shoots to bend downwards, and thus the rapid upward passage of the sap being checked, the dormant buds are plumped and forced into the position of fruit spurs. Beyond a little judicious thinning the best annual pruner of either an Apple or Pear tree is the production of a good crop of fruit. —A. D.

Fruit Culture for Market.—"F. W. B." (p. 310) quotes some very tempting averages of profit from fruit orchards in different localities, and, doubtless, they are realised sometimes, or fruit growers could not exist; but for the established orchards a high rent is demanded, and the expense of planting orchards and cultivating them up to a bearing period are weighty matters. With owners of land it is quite another matter, and "F. W. B.'s" suggestion that landlords should plant orchards is an excellent one, as the uncertainty of recompense for improvements is greatly against tenants planting largely, for few stop long enough in one holding to reap the full benefits arising from their plantations. Co-operative fruit stores are much wanted, in order to enable consumers to get the benefit of abundant crops. If some such ready means of placing consumers in direct communication with the growers were in existence we should hear no more of quantities of valuable fruit being spoilt through being unremunerative. At present the culture of fruit for preserving is about the safest investment, and promises to become a large industry in this neighbourhood, the fruit being sold direct to the manufacturers. —J. GROOM, *Linton, Kent*.

Apple Culture for Market in Scotland.—In Scotland the cultivation of Apples for market purposes is not carried on now to any extent worth naming, although at one time the Apple crop was one of considerable importance, especially in the Carse of Gowrie and the Vale of the Clyde. The leading kinds were Allankbank Seedling, Cambsanethan Pippin, Keswick Codlin, Early Julian, Eekinsville Seedling, Fulwood, Tower of Glamis, Golden Noble, Hawthornden, Red Juneating, Grey Leadington, Oslin, Old Pearmain, and Yorkshire Greening; these were the leading kinds. In more recent times growers planted such as Lord Suffield, Cox's Orange Pippin, Blenheim Pippin, and Warner's King; but, as has just been stated, not to any great extent, many failures having turned market gardeners against their cultivation. A crop of Apples is quite an exception in Scotland. —DAVID SYME.

Strawberries for Table Decoration.—Strawberries, as a rule, are grown to eat, but there is no reason why they should not

gratify the eye as well as the palate," and, in fact, at this season of the year, I prefer the sight of a Strawberry house full of fruit in various stages of development to all other sights in a garden. For dinner-table decoration a centre-piece or two side groups, consisting of about half-a-dozen pots of ripe Strawberries bedded in Moss, is, according to my idea, perfection, the foliage being so ornamental, and the glistening fruit under strong light so tempting. Any one who has only had Strawberries handed round, should try how much better they are when gathered from the growing plants on the table.—J. GROOM, *Linton*.

Destroying Red Spider on Strawberry Plants.—Allow me to correct an error (p. 275). It should be 1 oz. instead of 4 oz. of soft soap to 1 gallon of water.—J. C.

TREES, SHRUBS, AND WOODLANDS.

CITY TREES.

TOWARDS the close of last autumn, being desirous of ascertaining the best kind of trees for planting in the City of London proper as distinguished from its suburbs, I made several excursions through the territories of the Lord Mayor and Corporation, from Barbican on the north to the river on the south, and from Staple's Inn on the west to Tower Hill on the east. Although many capital cities of Europe can boast of longer and more numerous open spaces filled with greenery than the city of London, there are few that possess so fine a growth of individual trees as we do in the very centre of our own close, smoky, foggy business quarter. Leigh Hunt tells us in his *"Town,"* "that there is scarcely a street in the city of London from some part of which the passenger may not discern a tree;" a dictum which is perfectly true, as far as the principal streets of the metropolis are concerned. I know of no capital city, with the exception of Constantinople, that can match that splendid specimen of tree growth, the venerable Plane, in Stationers' Hall Court, which, although literally immersed in a square cell of brickwork, seems to thrive as bravely as if it were growing in its own native woods. The hot and dusty wayfarer, during the early summer, who seeks a refuge in this court from the bustle and clatter of Ludgate Hill, and pauses awhile beneath its green canopy, every twig of which forms a perch for a twittering sparrow, may shut his eyes and fancy himself for the nonce in some primeval forest, instead of in the heart of the City of London.

Beginning our excursion at the north-west corner of the City boundary, the first oasis that we come to is the garden of the chapel belonging to Staple's Inn, which lies behind the fourteenth-century houses in Holborn, immediately opposite Gray's Inn Lane. It is better, however, to enter it from Southampton Buildings. I have frequently astonished friends of mine who have lived all their lives in London by taking them through Southampton Buildings and Staple's Inn, even old inhabitants of the locality being unaware of the existence of this green spot. The garden is fairly well laid out with a maximum of turf and a minimum of flower-bed; but its principal beauties lie in its Planes, Figs, Vines, and Virginian Creeper. Passing along Holborn in the direction of the Viaduct we speedily reach the churchyard of St. Andrew's, Holborn, the Planes and Poplars of which are its chief excellences. There are a few Hawthorn bushes, but no matter how beautiful they may be when laden with fragrant blossoms, they wear a very shabby, ragged, withered appearance towards the end of the season. At St. Sepulchre's, on the other side of the way, there are some excellent Planes, but the Lime trees were in all their autumn ugliness long before the middle of September. In the central garden in Smithfield the Thorns and Poplars bid fair to thrive, and in years to come the Planes will no doubt do their best to rival their splendid brethren in the courtyard of St. Bartholomew's Hospital hard by.

Charterhouse Square is another well planted open space—a double row of Planes stretching diagonally from corner to corner of the enclosure in the form of a St. Andrew's cross. There are also a few Thorns, Elms, Limes, and a Sycamore or two, all of which were a very rusty appearance. A few Ashes and Poplars seemed to have borne the summer's heat with great patience, especially the latter. At one of the houses in the square there is a fine Grape Vine, which was green and beautiful, a remark that will apply to a splendid Fig tree on the other side of the enclosure. In the churchyard of St. Olave, in Silver Street, there are some fine Planes and Poplars, although it is inconceivable how they flourish so well in such a close locality.

Finsbury Square made a fine show with its Poplars and Planes, the Elms, Thorns, and Ashes coming off second best. Finsbury Circus, though smaller than the Square, is much better laid out, and beats its neighbour out of the field in the way of variety. The

Sumach and Ailantus were in great beauty here in the middle of October, and the Robinias and Figs were as green as they were in the preceding May. The Lilacs and Laburnums here, as everywhere else, were a most pitiful appearance.

Those who are not acquainted with the locality will be surprised to find some fine Figs and Thorns in Draper's Gardens, a newly-made street built on the site of Draper's Hall, on the south of London Wall. On the north side of London Wall there is a row of leggy-looking Limes, whose condition was such as to convince any disinterested observer of the futility of trying to grow this tree in the smoke and foul air of the City of London. This remark applies with even greater force to the Laburnum and Lilac. At the beginning of October the withered condition of these Lime trees was made all the more ghastly on account of a few of them having put forth a second growth of pale, sickly-looking leaves.

In the newly-laid-out churchyard of St. Botolph, Bishopsgate, we had Planes, Poplars, and Privets all in excellent condition, the latter especially, which, with great good taste, had been allowed to grow in their own way, instead of being pruned into ugliness. In the disused churchyard of St. Martin's Outwich, in Camomile Street, Bishopsgate, there are two fine old Planes in fair condition, considering they are planted close up against the wall of a house.

Wandering down Houndsditch we come to Aldgate Church which possesses a fine row of Poplars. There are some splendid Ashes, Planes, Sumachs, and Robinias on Tower Hill; but these are beyond the City boundaries, and it is only of City trees that I wish to speak.

There are numerous other green spots in the City which I visited, such as Lawrence Pountney Hill; Queen Street, Cheapside; Wood Street, Cheapside; St. Magnus' Churchyard; Fish Street Hill; St. Swithin's Lane, &c., but they all taught the same lesson, and that is, by properly selecting new subjects and rejecting old ones, the few open spaces in the City may be made green and lovely, if not for ourselves, at least for our children and grandchildren. I may remark, *en passant*, that I have purposely excluded the Temple Gardens from my list, although they are within the boundaries of the City, for the all-sufficient reason that from their extent and openness they can hardly be allowed to come within the same category as such confined spaces as Finsbury Circus and Charterhouse Square.

The splendid specimens of the Western Plane to be found within the City boundaries prove most conclusively that it is the city tree *par excellence*. Smoke, dust, drought, foul air, do not seem to have any effect upon it. Of its beauty and hardness there is no need to speak, for fine specimens are so common throughout the country, that it would be waste of time and space to enlarge upon its numerous points, further than to say that it possesses every property that best befits a city tree.

If the Plane is the Emperor, the Robinia is unquestionably the Crown Prince of city trees. It has not the majestic beauty of its superior, either in leafage or branchage, but it is fully fitted in every other way for city planting. In the autumn of 1875 I travelled from the shores of the Black Sea to those of the Atlantic, passing through Constantinople, Athens, Messina, Palermo, the principal cities of the Italian Continent, Macon, Dijon, Lyons, Orleans, Rennes, St. Brieu, and across the sea to Jersey. The summer had been an exceptionally hot one, and in the south of Europe the whole of the ordinary vegetation was burnt up; but, wherever I went, I found the Robinia still in the prime of its verdant loveliness. In the King's garden at Athens, in the garden of the Villa Nazionale at Naples, in La Flora at Palermo, where even the Orange trees, Date Palms, and Pepper trees seemed to be suffering from the heat and drought, the Robinias were refreshing masses of emerald verdure. There are comparatively few specimens of the Robinia to be found in the City of London, and, where they do occur, I am sorry to say that their natural beauty has been only too often interfered with by the ruthless hand of the pruner. There is no excuse for this, for the different species of Robinia are equal to providing the most capricious planter with subjects of almost every form that he can desire, from the bushy to the pendulous, without being obliged to resort to mutilation. This was the tree that William Cobbett extolled so much as a timber producer. Its value as an ornament in city and town gardens can hardly be overestimated, although its wood, in this country, at any rate, has never been satisfactorily used for industrial purposes.

Another tree, which is invaluable for city planting is the Ailantus glandulosa, whose large, long, half pendulous pinnate leaves contrast finely with the foliage of the Plane and the Robinia. Last autumn, in Finsbury Circus and other parts of the City, it remained green and fresh when many of its neighbours were already dropping their leafy garments. It seems to suffer from smoke and foul air almost as little as the Plane and the Robinia. It is to be regretted that it has been so sparingly used in the City. I could name a dozen spots where it would form a most agreeable contrast to the trees already planted. Finsbury Circus seems to be the only place where its true value has been appreciated.

The common Fig is another tree which seems to thrive everywhere alike in confined localities, such as Staple's Inn and Laurence Pountney Hill, as well as such open, well-ventilated spaces as Lincoln's Inn Fields and Bloomsbury Square. Its broad green leaves and bushy form give it a high value as an ornament when mixed with trees of contrasted habits. There are some excellent specimens scattered about the City, but they might be largely increased with advantage.

Poplars, more especially the large-leaved sorts, seem to be perfectly at home in the smoke, as those in St. Andrew's and Aldgate Churchyards abundantly prove. The fastigate varieties do not seem so well fitted for city work. The Vine, too, grown as an ornamental plant, be it understood, seems to be a most valuable addition to our City greenery, judging by the specimens in Staple's Inn, Charterhouse Square, and elsewhere. Its value for this purpose will be apparent to every one who has allowed a Vine to run wild without a thought of the Grapes it would yield. Its congener, the Virginia Creeper, is also always a success wherever it may be grown.

The Stag's-horn Sumach and many of the Ashes are also good trees, and the Catalpa, the Mulberry, the Paulownia, and the Tulip tree would, I have but little doubt, grow just as well. The Paulownia, from its comparatively low and bushy habit, ought, when combined with the Plane or the Robinia, to form an excellent subject for street planting. The Victoria Embankment, Northumberland Avenue, and Abbey Road, St. John's Wood, have all been planted with Planes and nothing else. It seems a pity that some attempt at variety was not made at the first going off. The Plane is undoubtedly the best of all city trees, but there is no reason why it should not have a foil now and then in the shape of a Robinia or Paulownia. In the City, and, indeed, in most of our town plantations, trees of a weeping habit, such as the Weeping Birch, the Weeping Willow, the Weeping Ash, the Weeping Elm, the Sophora are almost entirely neglected. In the triangular enclosure in the middle of Harrington Square, Hampstead Road, there is a Weeping Willow, which, by its contrast with the more erect trees near it, is a most artistic feature in the picture. Although a high authority on the subject has given it as his decision that dark-leaved Oaks and Beeches are inadmissible in a tree picture, I must venture to differ from him. Surely dark foliage, when used sparingly amongst masses of green, cannot fail to satisfy the artistic eye.

It is time, however, to speak of those trees which should be resolutely banished from our City enclosures. The first of these is the Lime. It is true that in the early summer the Lime, with its black trunk, bright green leaves, and white tassels of sweet-smelling flowers, is an admirable object, but in the course of a very few weeks we have to pay a heavy penalty for our pleasure. The leaves begin to shrivel in the sun, the trees are invaded by legions of caterpillars, and the Lime is no longer a beautiful, but a painfully ugly object, which only becomes tolerable when the winter winds have whisked off its last ragged leaf. The same remarks apply, though perhaps in a secondary degree, to the Lilac and Laburnum. Lovely as these well-known trees are in the beginning of the season, nothing can equal their raggedness later on. Could Limes, Lilacs, and Laburnums be bedded out in the spring, and taken away when they begin to show signs of rustiness, there would be nothing to say against them; but, as we have not yet reached such a pitch of civilisation, we must either be content to put up with their latter-day shabbiness, or else remove them altogether. Judging from the general condition of Elms, Horse Chestnuts, Hawthorns, and Sycamores scattered so sparingly about the City, they seem to thrive but poorly, although their failure is hardly so complete as the trees just mentioned. The Horse Chestnut especially seems little fitted for city use, although it grows fairly well in Regent's Park. As this article is intended to treat of trees and shrubs grown for the sake of their foliage, I shall say nothing about supplying the places of such subjects as the Horse Chestnut, the Thorn, the Lilac, and Laburnum. With such a list as the above city planters might, in a few years, make our open City spaces perfect little Paradises of leaf and branch beauty at a very small outlay.

A word about the lesser vegetation in our City squares. Like his suburban brother, the City gardener seems to be hopelessly possessed with the idea that the only underwood fit to grow in town must necessarily be either the everlasting Laurel, the perpetual berryless Aucuba, or the eternal well-cropped Privet. The sooner the whole tribe of so-called evergreens is rooted up the better, and if our English Privet followed them it would be no great loss, for at best it is a weak-looking shrub. London gardeners who cannot keep their hands from mutilating the Privet should visit the hedges of it in the Regent's Park, where, for a wonder, it is allowed to have its own way, and therefore speedily grows into a refreshing screen of verdure. But, pretty as it is, it is distanced by its Japanese congener, which has larger and glossier leaves, and is altogether more sturdy in habit. Sometimes a gardener, bolder than the rest, plants

a few Rhododendrons, Euonymuses, or Hollies. In the first instance the result is generally a dismal failure; in the two latter a gratifying success, as the specimens in Finsbury Square and elsewhere abundantly prove. There are hundreds of hardy shrubs, beginning, let us say, with the Box and the Berberry, that I feel confident would grow like weeds in the most confined city enclosure. This part of the subject, however, I do not wish to treat of further, as, during my investigations, I confined my attention almost entirely to trees.

CHARLES W. QUIN.

AUCUBA BERRIES.

WITH regard to these, I dare say both "J. G." and Mr. Tillett are right, though the success attending their respective efforts is so widely different. If about this season we carefully examine a batch of seedling Aucubas, we will find that the time occupied by the whole batch in flowering is about six weeks; some early, others late. The originally imported variegated Aucuba (now so extensively cultivated) is a female, and one of the latest to flower in spring, so that berries being the desideratum, it would serve no purpose to plant alongside of the old Aucuba one or more plants of the earlier flowering males. "J. G.," who has been successful in putting berries on his plants, must have had male plants which blossomed with his females. Mr. Tillett's non-success (and his is by no means exceptional) was probably due either to his plants flowering at different times, or to the flowers of one or other sex, or both, being injured (a common occurrence) by frost or cutting winds. For the latter reason, we may always expect to have better crops of Aucuba berries in the warmer parts of Great Britain than in other less favoured localities.

In the foregoing, many, I have no doubt, will find satisfactory reason for the success or non-success attending their efforts to put berries on their Aucubas, and here I probably ought to stop; but, having just lately looked with admiration on a large plant literally bent down with the weight of its large, red-tinted fruit (not fully coloured yet), you will, perhaps, indulge me with space for a few more remarks on this excellent evergreen shrub. We have seen that many of the seedlings do not flower at the time when the common kind does; and, to further the certainty of putting berries on it in the future, it is obvious that nurserymen have a duty to perform, not only for their own credit and benefit, but in justice to their patrons, and that is, the selecting (for sale) from amongst the thousands of seedlings now raised by them such male plants, be they green or variegated, as flower at the time when the old female plant blossoms. Many of each batch of seedlings are green, and the sexes seem to be fairly proportionate. Numbers of the variegated seedlings are better marked than the popular kind, and some of them may, some day, supersede it. It is scarcely possible to speak too highly of the green seedlings, there being few, large-leaved evergreen shrubs that rank superior to them, and the wonder is that they do not oftener find places in the forecourts of our cities than they do, seeing that so many naturally handsome and elegant shrubs are so denuded of the beauty natural to them as to become unsightly skeletons.

GEO. SYME.

Borrorraeth.

— Mr. Tillett asks if his experience in reference to the fertilisation of Aucuba plants is exceptional? I think it is, as Aucubas often get fertilised, even when the male and female plants are at great distances apart, and when one would think it would be impossible for the pollen to reach the female. Accompanying this is a branch of the variety which we call *A. himalaica*, which was confined in a corner in an old Vineyard last year, and, to my certain knowledge, no male Aucuba was nearer it than 200 yards, yet this plant was loaded with berries, and is certainly one of the finest berry-bearing Aucubas which we have, its large scarlet fruit remaining on the plant for many months together. I planted a few males amongst my bed of the common Aucuba, and the result was that every plant became fertilised and bore berries. I enclose also a sprig of what we call *A. latifolia*, a green kind, which, it will be seen, is a little later in flowering than the female kind, but this is owing to the latter having been kept in the house all the winter.— J. SCOTT, Merriott. [The specimens sent by Mr. Scott were covered with berries, most of which measured $\frac{3}{4}$ in. in length. He also furnished leaves of what he calls Scott's Aucuba japonica macrophylla, a finely variegated variety, and strikingly handsome. One leaf of it which we measured was just 1 ft. in length and 5 in. wide at the broadest part, and in appearance seemed more like the leaf of a great Arum than that of a shrub.]

— Mr. Tillett's difficulty in getting the flowers of his female Aucubas fertilised with so many male plants growing amidst them is surely exceptional, as I have so far seen little difficulty in getting

berries in abundance where male plants were near. An excellent plan, and one which I have seen adopted with success is, where the male plants are precocious to grow them in large pots, and keep them in the cool shade of a north wall until the female plants are in bloom, then carry these pot plants to the required place, and elevate them just above the tops of the female plants; the wind will then more freely distribute the pollen over the blooms to be fertilised.—A. D.

—Mr. Tillett's Aucubas will doubtless in time produce fruit. It is not an exceptional circumstance for the males in certain plants to flower before the females; that happens in the Hazel, yet we all know that Nuts come without artificial fertilisation. In the case of the Aucuba, we have many bushes quite laden with beautiful red berries, though the male varieties are at great distances off. If Mr. Tillett's plants have only been planted out one or two seasons, I would recommend him to allow them to remain undisturbed, and await the result. Although I have grown Aucubas largely for several seasons, I never saw them so well berried without artificial fertilisation as they are this year.—JAMES GROOM, *Linton, Maidstone*.

—Mr. Tillett's experience as to the male Aucuba blooming before the female is not exceptional, at least I experienced the same difficulty; but, fortunately, I had the males in large pots and plunged them under a north wall, where their progress was retarded, and when the females were in flower, or nearly so, the males were planted amongst them. The result is, that at present every female has red berries on it, though, by some means, the quantity has been reduced during the winter. I may add that this year the blooms of both males and females appear, as far as I can see at present, to be more uniformly developed.—J. WOOD, *Woodville, Kirkstall*.

—I would recommend Mr. Tillett to take up a few of his male plants, pot them in large pots or boxes, and place them in some cool, shaded situation until his female plants are in bloom, and then place his males among them. In this way I have succeeded in getting a good crop of berries.—D. P., *Hayward Heath*.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS.

Hardiness of the Camellia.—As one amongst the many instances of the hardy constitution of the Camellia I observed at Kew the other day in an open border about half-a-dozen good-sized plants, which, during the last and previous winters, have been quite unprotected, expanding flower buds in abundance, though large numbers have fallen. One variety in particular is very attractive, being in full flower with its blossoms scarcely inferior to those grown under glass, and the foliage is of a deep glossy green.—W. G.

—Many predicted that Camellia blooms on open-air bushes would fall off after the late severe winter, but I find that such is not the case; here Camellias are now flowering profusely, even the double white being loaded with blossoms. Up to the present time we have scarcely had two fine days together free from frost or snow or driving storms; still the blossoms keep expanding, and some large bushes which we recently transferred to the conservatory have, in spite of removal and check attending it, unfolded a glorious display of bloom. As to hardness, I can safely assert that the Camellia is harder than the Laurustinus, which with us is much browned. I may also add that plants of the old white Azalea planted out in the open air are quite healthy, and swelling their buds up for flowering.—J. G., *Linton Park, Maidstone*.

Conifers and the Frost.—Amongst the numerous varieties of Conifers growing here very few have suffered from frost during the past severe winter. *Arancaria Cunninghamii* does not appear to be injured in the least, but it is well sheltered on all sides by loftier Conifers, and several other tender varieties have thus far escaped, while many of our ordinarily hardy flowers have been killed, and the bloom of even the hardy *Forget-me-not* has not been all cut off. I may add that a small specimen of *Libocedrus Doniana* is very much injured by the late spring frosts, the outer shoots being all browned, but otherwise it is fresh enough. It is not, however, advisable to plant subjects that are not frost proof, as, except for their rarity, they are not more valuable than those that have been thoroughly tested as regards hardness.—J. GROOM, *Linton*.

Large Hardy Azaleas.—Mr. Osborn gives (p. 318) the measurement of some specimens of these which are growing in his nursery at Fulham. Allow me to give you the measurement of two specimens of the common *A. pontica* which are growing on the lawn here; one measures 10 ft. 8 in. in height and 26 ft. in diameter, and the other 9 ft. 3 in. in height and 19 ft. 6 in. in diameter. It is needless to add that such specimens when in flower are a sight worth travelling miles to see, and also when the leaves begin to ripen in the autumn. I can obtain no information about their age. They are growing in a brown, hazely loam and are in perfect health, and, as a rule, flower magnificently.—JAS. FAIRWEATHER, *Halston*.

PLATE CLXXVII.

A GROUP OF NEW TUBEROUS-ROOTED BEGONIAS.

Drawn by CONSTANCE PIERREPONT.

Few plants have responded more readily to the manipulations of the hybridist than tuberous-rooted Begonias. *B. boliviensis* and *B. Veitchii* are species, and a very large proportion of the popularly-named varieties are the result of crossing these two sorts. If any particular species be crossed with another allied species the produce is generally intermediate between the two, and, therefore, amongst the first seedlings from the cross there are usually but few that prove to be distinct. In the next generation the variations are greater, and the further the seedlings are removed from the first cross the more frequently do these occur. Tuberous Begonias are, as has just been stated, a class of plants that are easily hybridised; seed-pods are speedily formed, and good flowering plants are produced in six or eight months from the time when the seeds are sown. Propagating them by means of seeds is effected by preparing well-drained 5-in. or 6-in. pots. Over the drainage place some Moss or fibrous loam, and fill up with a compost of two parts loam, one of leaf-mould, and a little sharp silver sand. The seeds will be found to be very small, and should only just be covered with the soil, which may be kept moist by placing a square piece of glass over the pot. January is a good month in which to sow the seeds, which will vegetate freely in a temperature of from 55° to 60°, and most speedily on a gentle bottom heat. The plants, when up and of sufficient size, should be pricked off into the same sort of soil as that in which they have been growing. When the weather is warm they may be placed in a greenhouse or cold pit, and be shifted into larger pots as they require more root-room. They will flower about midsummer beautifully in pots 5 in., 6 in., and 7 in. in diameter, according to the strength of the plants. A good compost for them to flower in may consist of turfy loam three parts, rotten manure one part, and one part leaf-mould and a little sand, to which may be added a few bits of charcoal to keep the compost open and sweet.

Many of the choicest varieties cannot be freely propagated, and, as a consequence, are high-priced. Those who want a good stock of plants to furnish their greenhouses or flower borders at a cheap rate would do well to purchase a packet or two of the best seeds, and treat them as directed above. A collection of the best sorts, if bought in the form of plants, costs a considerable sum, and they are only necessary for those who intend to exhibit them. Named varieties are propagated by means of eyes, with a leaf and part of the stem attached, and although every one of such eyes will produce roots, top growth, and also tubers, very few of them will make permanent plants, that is, they will not start or grow from the tuber the following season. It is only the few eyes that have what growers term a wood bud that are propagated, and these are usually found near the base of the stem. Some of the English-raised hybrids have very few eyes that will produce plants, and President Burelle, a fine double variety, is so difficult to increase, that its raiser, Mons. Lemoine, has, as yet, but a small stock of it.

Last year I saw in the nurseries of Messrs. Laing & Co., Forest Hill, over 150 distinct varieties of these tuberous-rooted Begonias in pots. They were arranged in one house and comprised nearly all the sorts that are worthy of culture. Amongst them were *W. E. Gumbleton*, rich scarlet, with the petals well shaped; *Charles Ballet*, crimson-scarlet, shaded with purple towards the centre; *Professor Pynaert*, a bright rose, large-flowered sort; *Bayard*, glowing scarlet; *Baron Hruby*, crimson, suffused with violet at the base, one of the best; *Vesuvius*, a very free-flowering orange-red; *Acme*, rosy-red; *Baron Léon Leguay*, pale rose, distinct and good; *Laurent Descours*, bright rose, and large and showy; *Alexander Leguin*, pale orange red; *Lecoainte*, a very beautiful variety with bright rose-coloured flowers; *President Burelle* and *Louis Van Houtte*, the two last double-flowered kinds. Besides these there were many seedling varieties flowering for the first time, which will, when sufficient stock can be obtained, take their place as standard varieties.

Tuberous Begonias have been grown in beds and borders very successfully. Last year single specimens might have been seen, out-of-doors 3 ft. in diameter and more than 3 ft. high, well furnished with flowers and foliage. As bedding plants in masses they are too brightly coloured for some tastes, but that will easily be toned down when the yellow and white varieties are sufficiently numerous to be used for outdoor decoration. J. DOUGLAS.

[For the varieties represented in the accompanying plate we are indebted to Messrs. Laing & Co., of Forest Hill. The large centre bloom is *Marquis of Salisbury*, that immediately above it *Mrs. Carter*, that below it *Thomas Bell*; the delicate pink variety is *Garland*, the yellow *Mrs. Colonel Long*, and that just below it *Rosy Box*.]



A GROUP OF NEW BEGONIAS. (LAINC).

GARDENING FOR THE WEEK.

Flower Garden.

Fortunately, in gardening, as in all other matters, there are counterbalancing circumstances which have this season been of the greatest service to us. The protracted winter having hindered planting and other extra work, such labours have now been accomplished during the time which in ordinary seasons would have been given up to mowing, but which this season did not require attention till at least three weeks past the usual time. A commencement, however, has now been made, and frequent cutting from this time to the end of September is indispensable, if a good turf be desired; and without this even the best of gardens becomes unattractive, which need not be the case, seeing that the expense of mowing is reduced to a minimum by the introduction of so many good kinds of lawn mowers. For the next two months the whole of the turf will require to be mown once each week, and after that once a fortnight to the end of the season. Walks should always be rolled after heavy rains, and the weeds on them be kept down by hand picking. It is not yet too late to turn and surface-gravel any that require that attention, but the sooner it is done, whilst the weather is showery, the better will they consolidate. Bedding out will now demand a large share of attention, both as to preparation of beds and plants. The system has grown to such proportions that for this, in many establishments, other most important and more profitable work has to be neglected; but so long as employers demand it, as many of them do, so long must we endeavour to make the best of a bad bargain. One way out of the difficulty is to make use of all the hardy plants that are in any way suitable for association with the general stock of summer bedding plants. We are certainly drifting in that direction, as note the use now made of Sedums, Saxifrages, Yuccas, Eriophyllums, Helioscopes, and other small-growing shrubs, many of which are not only as effective as the best kinds of bedding plants, but far more so, at once adding additional grace to the parterre and neutralising that gaudiness which is now-a-days far too prevalent in nearly all summer bedding arrangements; moreover, such hardy plants can be left in position when the others are gone, and thus, in a measure, one great objection to summer bedding, viz., its transitory character, is obviated. There are other plants of a graceful nature which, though not quite hardy, are nearly so, and of the easiest culture, and well adapted for summer planting out, either as central objects in formal arrangements, or as "dot" plants to relieve the monotonous glare, which is unavoidable when Pelargoniums, Calceolarias, Lobelias, and similar plants are used. Among such are the following: *Acacia lophantha*, *Aralia Sieboldii*, *Grevillea robusta*, *Dracena australis*, *Chamaecyparis* (small plants), *Ficus elastica*, *Araucaria excelsa*, *Phormium tenax variegatum*, *Solanum marginatum*, *Ferula gigantea*, and others of a similar character. Pansies, Violas, Calceolarias, Verbenas, and plants of like hardiness can now with safety be planted out, and the space they have occupied in pits or frames will be available for more tender subjects, such as *Iresines*, *Coleuses*, and variegated Pelargoniums. None of the plants should be allowed to get stunted through want of root space or drawn from want of head room; to prevent this either pot off or plant out in frames any that are likely so to suffer either time arrives. *Iresines* and *Coleus*, which are generally used in quantity, do best planted out in a warm pit, and such quantities of pots and boxes are set at liberty for other plants. Seedling Lobelias, *Centaurea candidissima*, *Cineraria maritima*, and *Perilla nankinensis* will all thrive well if pricked out in cold pits, and as to *Pyrethrum Golden Feather*, that with us never has any preparation other than sowing it in the warmest available position in the open air; by thus sowing it in the beginning of March we never fail to have an abundant supply.—W. W.

Auriculas.—We are now in the midst of preparations for exhibiting our Auriculas, not wholly welcome work, inasmuch as they, as a matter of course, must consist of the best plants and the choicest varieties, and they do not always come home in quite such good condition as that in which they were before being removed from home. It is, too, a very anxious time for the cultivator. Some of the choicest kinds are very scarce, and if any accident happen to them it is sometimes difficult to get another plant of the same sort. As a set-off, however, to all this an exhibition of this kind affords an opportunity for growers from all parts of the country to meet together and discuss matters relating to Auriculas. The general public also have an opportunity which would not otherwise be afforded them of seeing the plants. As Auriculas go out of bloom, if it be not intended to save seeds, the flowers should be pinched off as soon as they fade, leaving part of the footstalks. If the stem be broken off the portion that is left does not dry up, but dies off moist down to the centre, and sometimes kills the plants. Now is the time to hybridise, in order to obtain seeds that will produce new and good

varieties. Green-edged varieties should be crossed with flowers of the same section; grey-edged with grey-edged, and so on. In the case of Alpines the light-edged flowers with white centres should be crossed with others of the same class. Shaded-edged flowers are most esteemed, and such only should be used for parents.

Carnations and Picotees.—Plants in beds and borders are now starting into growth, and will not succeed if neglected. Make them firm round the roots by pressing down the soil with the fingers, and, if necessary, a short stick should be placed to any weakly subjects. See that the surface of the beds is stirred up and that weeds are removed while they are in a small state. By this time the earliest-rooted plants of the perpetual-flowering section ought to have been potted off, and on the care taken of them now depends whether they will gladden the cultivator with their beautiful sweet-smelling flowers at Christmas or not. The plants should be encouraged with a little warmth during cold weather, but they must be placed near the glass, and where a free circulation of air can be admitted amongst them. Pot off others as they require it, using small pots. Seeds of the different sections may also be sown in pots, placing them in a hotbed.

Hollyhocks.—All these ought to be planted out by this time in beds or borders; even the spring-propagated plants should be put out at once, if not already done, and great care should be taken in planting them, especially if the spikes are intended for exhibition. Some good loam mixed with a third part of rotten manure should be placed round the roots. It is by paying attention to minute details that success is achieved.

Pansies.—These require continual attention. Now wireworm and the leather-coated grub will be troublesome underground, and must be looked for if the beds indicate their presence. For "when the flowers fall off in quantity" (p. 305) read "quality." The meaning is this: A show Pansy will continue to flower until the character of the blooms are so deteriorated that the variety cannot be recognised; in that case pick all the blooms off and surface the soil round the roots with rich compost; this will restore the blooms again to their original size and quality.

Hardy Primulas.—The most useful at present are *P. aemona* and its varieties—hardy kinds enough; but they do not stand well out-of-doors, owing to damp and frost. In cold frames they stand severe frosts with impunity. We leave the plants in cold frames until the flowers open, when they are removed to the greenhouse. *Primula japonica* sometimes flowers well in pots, and, although this variety has not quite realised the expectations formed of it, still it should be grown for the sake of variety. Green fly persistently attacks it, and also red spider, pests which must be destroyed. In short, all this class of plants grow and flower freely in cold frames, and should be removed to the greenhouse when in flower.

Tulips.—These are now becoming interesting; their flower-buds are rising strongly. They are later this year than usual. Ours are fully exposed to the weather, and, though frosts by night and keen, cutting winds by day have been the rule rather than the exception, not a leaf or bud is injured. If the surface of the beds has not been dressed with rotten manure, that should at once be done. The different species of Tulips that have been introduced recently are very interesting, some even very beautiful, and they form a distinct and pleasing feature in beds or borders. They can also be grown in pots in cold frames, using light soil in which to plant them. The bulbs of some of them are small, and, therefore, they do not require to be covered deeply.—J. DOUGLAS.

Conservatory.

If a sufficient number of Azaleas, Epacris, and other hard wooded, spring-flowering plants have been retarded, there will be little difficulty in keeping conservatories now fully furnished with blooming subjects, as where there is at command a small house not much under the influence of direct sun, there is no reason why a continuous supply of Azaleas, which are the most effective of spring flowerers, should not be at hand all through the coming month, and it will invariably be found much more satisfactory to have their blooming thus dispersed over a lengthened period than to have a profusion for a time with scarcity afterwards. Even where there is no regular house or pit, with some spare lights fixed up temporarily during spring on the north side of a wall, a very useful retarding structure may be improvised, only whatever may be done in this direction the plants must not be subjected to insufficient light, as considerable shoot-growth is now going on, and any deficiency in this respect will have a most unfavourable influence upon the state of the plants next year. It is necessary to impress this upon young growers of this class of plants, as an idea is prevalent that no harm would accrue through their being kept for a time in an over dark situation, as the growth made under such conditions could be ripened by exposure afterwards; yet this is by no means the case, as leaves that

are formed under insufficient light are so far wanting in texture that no after treatment can set them right; be the plants of an evergreen, semi-evergreen, or deciduous character, it is of the greatest importance that their leafage be produced under conditions that will admit of its endurance for the full extent of its allotted time.

Oranges and Citrons.—These come more under the head of intermediate temperature subjects than those belonging to the greenhouse; for, although in this country they frequently receive little of the warm treatment at the time their growth is being made which they so much enjoy, still, to keep them in a vigorous, healthy state, with a full complement of luxuriant foliage, without which they have but a meagre appearance, they should now, when, in most cases, their growth will be about commencing, receive, if possible, warmer treatment than that which an ordinary greenhouse affords. Where there is a conservatory, kept, as usual, above a greenhouse temperature, they will do there whilst they are making their growth, but they should be set where they can be liberally syringed every day till it is completed, or they will succeed in a late Vinery, but the latter is only a make-shift sort of place; for, although they enjoy a little shade from bright sunshine whilst growth is in progress, still the dense foliage of the Vines continuously overhead excludes more light than is desirable. In the cultivation of large specimens of either Oranges, Citrons, or Lemons, it is desirable that their growth be allowed a little more freedom than it often receives. By using the knife less, the trim appearance that these plants frequently have where every shoot is cut back to an even surface, like the standard Bays so much used on the Continent, will be obviated.

Greenhouse.

Standard Heliotropes and Habrothamnus.—Standard plants are often considered in themselves not very striking objects, but they are most useful in combination with others of a dwarfer character, as by their use the disagreeable even surface frequently present in greenhouses and conservatories is avoided. The above two subjects are particularly adapted for growing in this form, and the present is the most suitable time through the season for preparing them. They may consist of established plants, headed down to near the collar; when broken into growth the shoots should be thinned to a single stem, which should have a stick for its support, and should be run up to the height required, which may be from 3 ft. to 5 ft., according to the size or description of the structure which they are intended to occupy, and the plants with which they are to be associated when in flower. After the desired height has been reached stopping must be resorted to, and continued until the heads have attained a sufficient number of shoots. If headed-down plants like these are employed, as soon as they have fairly broken they should be turned out of the pots, a portion of the old worn-out soil should be removed, and more root-room should be given them, using tolerably rich soil. Thus managed, useful sized examples may be had by autumn, at which time their flowering will be found very acceptable. If established plants be wanting, it will be necessary to proceed in the usual way with cuttings, which, if treated liberally as regards pot room, will soon reach a serviceable size. In reference to the Heliotrope, so much esteemed for its perfume, it is doubtful if any of the new varieties are better than or equal for this purpose to the old original kind, which still appears to have the preference with growers for market.

Brugmansias.—Old plants of these that were cut back and started some time ago will now have made a certain amount of growth, and may, if they require it, receive larger pots, or have the surface renewed with fresh soil, keeping them in any available structure where they will get plenty of light and air, so as to keep their shoots short and stocky, which latter is essential to a vigorous head of bloom.

Greenhouse Rhododendrons.—These beautiful spring-flowering plants will be found to be most useful where large conservatories have to be kept gay; being almost hardy, they may be placed out-of-doors during the summer and autumn after their growth is made, which is a great advantage, and in winter they may be put into pits, Vineries, or anywhere where space can be found for them. Amongst the best are Countess of Haddington, bluish white; Gibsoni, a compact-growing, free-flowering, white kind with small foliage; javanicum, bright orange; Prince of Wales, orange-red; Princess Mary, white, tinged with pink; Thomsoni, scarlet; Veitchianum, white, tinged with yellow, the petals being fringed; Edgworthi, white, sweet-scented; retusum, orange-red; Princess Alice, bluish-white; fragrantissimum, bluish-white; and, for a roomy situation, Nuttallii is one of the best; it bears large heads of very large white funnel-shaped flowers; these will all succeed in ordinary peat soil, and do not require so much pot-room as do many plants of similar growth and habit. After blooming they will make their growth in any greenhouse or pit, during which time they must be plentifully sup-

plied with water, and after the flowers have formed they can be set out-of-doors.

Greenhouse Dracænas.—These, especially whilst confined to a small or medium size, can be used for so many purposes that they are almost indispensable, but it is necessary to keep up a continuous supply of young ones, as the larger stock will come in for use where smaller plants would not be so effective. When they get naked and leggy it is well to take off their heads, putting these singly in pots just sufficiently large to steady them, and subjecting them to a warm, confined, moist atmosphere, treatment under which they will soon root. The stocks, after the heads are removed, if placed in stove heat, will, before long, push out a number of shoots that can be taken off as they get large enough and rooted, or a portion of the stems may be cut into lengths of 1 in. or 2 in.; these, if treated like cuttings in warmth, will break and form roots in a very short time, making useful little plants in eighteen months.

Callas are most serviceable when grown with single crowns that can be flowered in 6-in. pots; a plentiful supply of this size will be found of very much more use than large specimens. The flowers are of such a distinct and striking character, that one bloom is frequently as effective as two or three, and when sufficient numbers are grown to admit of their being brought into flower in succession, there is no difficulty in a supply being kept up from Christmas until late in the spring, but where Callas are grown in quantity it is best to turn them out in summer. Specimens that have flowered, consisting of several crowns, should now be taken out of their pots and divided, putting them in a row in a light situation in a well-prepared piece of ground about 1 ft. apart, supplying them sufficiently with water through the season until the beginning of September, when they can be taken up and placed in pots of the size above mentioned, in which they will bloom. This I have found to be the most satisfactory way of growing them which I ever tried.

Early-flowering Pelargoniums.—Independently of the zonal section of these, which, when well managed, can be easily had in bloom all through the winter and spring, there are numbers of early-flowering varieties that partake more of the character of the large-bloomed or show kinds than of the zonals. These are not equal, from a florist's point of view, in the form of their flowers, to the best exhibition sorts; but, nevertheless, they are such as are largely cultivated by the London market growers. Many of them have only local names, and often not cultivated by any except those who grow for market, yet they are most valuable as decorative subjects, being of a very floriferous habit, sturdy, spry-jointed, and able to bear a considerable amount of warmth, to bring them into flower. If these were more generally cultivated in private establishments they would be found to be of great use at this time of the year, as they are far better than the endless presence of red and pink zonals.

Large-flowered and Fancy Pelargoniums.—The blooms of these will now be fully formed, and will have made some progress, and be indeed in a condition to be benefitted by the application of manure-water, which, if used too early in the season, is apt to cause a disposition to produce leaves at the expense of flowers. If sufficient ties and supports have not been already given to the plants to keep them in a presentable state, at the same time avoiding all stiff, formal training, this should at once be attended to.

Chrysanthemums.—These are so easily grown and tenacious of life that in the press of other matters at this time of the year they often get neglected; yet, though so easily managed, want of attention is sure to result in a deficiency of flowers when they come to be wanted. A cold frame up to the time when the plants have got fairly established in 5-in. or 6-in. pots, with plenty of air, and fully exposed to the light is the most suitable place for them. If cuttings were put in in November or December, and kept in a cool place just out of the reach of frost, they will, ere this, have been transferred to pots of the size just named. Such as were propagated later through the winter must, as soon as the little pots they occupied are filled with roots, be at once moved into larger ones, stopping the shoots of those that are intended to be grown in the usual bushy form; but I should recommend a portion to be grown in the shape of low standards on a single stem from 2 ft. to 2½ ft. in height, and not stopped until they have reached this, after which, nip out the points two or three times, so as to induce them to break a sufficient number of shoots to form the head, and all on from the first, removing any side breaks below these or sucker growths from the bottom; but for growing in this way the freest flowering, medium-sized kinds should be selected, as many of the largest bloomed varieties that are not able to perfect so many flowers are not so well adapted for this shape. Mrs. Rundle, white, incurved; Mrs. Dixon, rich yellow, incurved; George Glenny, straw coloured, incurved (both the latter are sports from the unsurpassed Mrs. Rundle, differing in no way from that

variety except in colour); Julie Lagravère, velvety crimson; Hermione, bluish; Annie Salter, yellow; Lady Talfourd, rosy-lilac; purpleum elegans, violet-crimson; and others of similar habit will all be found suitable for growing in the form of standards.—T. BAINES.

Hardy Fruit.

Here, North Hants, on the mornings of the 12th and 13th inst., we registered 8° and 9° of frost respectively, and the same on the 18th and 19th, and this, with the wind continually blowing from the north and north-east, has shattered our hopes of a full Apricot crop, for, though the trees were well protected with scrim canvas, many of the fruits, which were the size of French Beans, are quite frozen through, and, curiously enough, those only just setting seem all right. Happily, Pears, Plums, and Cherries have not yet unfolded their blossoms, and therefore seem uninjured. Such weather almost makes one lose heart, but still every effort must be made to save fruit-buds from further injury by protection of some kind. Gooseberry and Currant bushes should have dry Bracken, straw, or hay shaken over them; some that have been thus covered are quite uninjured. Straw litter is somewhat unsightly, but little is thought of this so long as the fruit is saved. Any grafting yet on hand should have immediate attention, and after sharp frosts the clay put round the grafts should be examined, as the frost may cause it to crumble off.

It is a good plan, when the operation is first done, to lay over the clay either hay or Moss, which both preserves the clay from being cracked by frost or drying winds, and from being washed off by heavy rains. Apricots are now fit to disbud; as a rule, this is best done as soon as the fruit is set, and before the shoots have attained much size. Some cultivators do not disbud Apricots, but in lieu pinch out the points of all growths that are not required to furnish the wall as soon as two leaves are formed. Of course this persistent pinching induces the formation of a mass of fruit-buds, indeed, far too many, and hence our advocacy of disbudding in a reasonable degree, say to about one-third the extent as that required by Peaches; even then there will be abundance of shoots for the formation of fruit spurs, and these should be kept constantly stopped throughout the summer. Thinning the fruit betimes is also an important matter; usually it sets in clusters where there is space only for a single fruit, so it must be obvious to all that an early removal of the surplus produce is of importance. If any leaves curl up, grubs will be found ensconced in them, and should be searched for and destroyed. With the exception of the liability of Apricots to canker, this leaf-rolling maggot is about the only enemy they have to contend against. Young, newly planted trees are apt to grow too strongly, more especially the uppermost shoots. In order to check this tendency it is well to stop the leading shoots twice or so during the season; a more equable distribution of sap to all parts of the tree is thus ensured, and, therefore, a more even growth. Such remarks are not only applicable to newly-planted Apricots, but to all other kinds of fruit trees, and not only to wall-trained trees, but also to nearly all others. Peaches are in magnificent blossom, the flowers being full and well developed, and, setting aside accidents, this should be a good Peach year. Where the trees and walls were not dressed in winter it is more than probable that green or black fly will soon make their appearance, and if, when first perceived, the trees be well dusted over with Tobacco powder, or occasionally syringed with soapy water, there will soon be an end of them. This is a matter that will not be put off without serious injury being the result, as these pests soon gain the mastery. "Prevention is better than cure;" hence the great importance of winter dressing, which I have so frequently insisted on, as well as early disbudding. Still, let the trees be sheltered nightly; the fruit will swell more kindly by avoiding extremes of either heat or cold, therefore, for the present, the blinds should be down for a couple of hours during the brightest sunshine, and as soon as all the fruit is set a vigorous syringing with tepid water will help to dislodge the fallen blossoms, and loosen any that may still adhere to the young fruit. Apples are fuller of flower-buds than they have been for some years, but bullfinches are now playing sad havoc with them. These little depredators were so late this year in their attacks that we had begun to think the winter had thinned them, but such is not the case. We continue to shoot them in self-defence, having in vain tried all other known remedies. Strawberries have gone through the winter with but little apparent injury, and they are now making fine growth. Any decayed leaves may be removed carefully so as not to injure the new foliage. If they have not yet received a surface mulching of well-rotted manure, that should at once be done, but previously hand-weed. The surface roots of Strawberry plants are their mainstay, and no digging or deep hoeing should therefore even be practised amongst them. The plants should not continue more than two years on the same ground, and, therefore, if it be well trenched and manured previous to planting, the surface-mulching recommended will be ample nourishment without the doubtful proceeding sometimes resorted to of forking in rotten manure.

Plantations made now of the earliest-forced plants will produce very early runners, and if the first flowers that show themselves after they get established be picked off, successional blooms will produce a fine crop of autumn fruit.—W. W.

Extracts from my Diary—April 28 to May 3.

FLOWERS.—Shifting Chrysanthemums out of cutting pots singly into 5-in. ones; also shifting established plants. Shifting *Gloxinias*. Potting Mignonette for growing into standards. Planting out old Chrysanthemums on north border. Potting *Calceolarias* out of 6-in. pots into 8-in. ones. Putting in cuttings of *Bouvardias* and *Verbenas* for stock. Potting *Pereskia* stocks on which to graft *Epiphyllums*. Moving *Pelargoniums* from Vineries to cold houses. Putting in cuttings of *Viola*s under handlights, and planting old plants outside under north wall. FRUIT.—Planting Melons of various kinds. Thinning the fruit of Strawberries. Disbudding Peaches and Nectarines and thinning the fruit. Tying and pruning outdoor Fig trees. Thinning Grapes. Clearing out fruit-room. Watering cold Peach house borders. Tying Vines. Watering outside border of early Vinery. VEGETABLES.—Shifting Tomatoes out of seed-boxes into 5-in. pots; also Vegetable Marrows out of seed-pans into pots of the same size. Making a bed for Vegetable Marrows with old Cabbage stumps and manure. Clearing away Brussels Sprouts and preparing border for the reception of other crops. Tying and stopping Cucumbers. Planting Garlic and Shallots. Sowing first batch of Scarlet Runner Beans. Sowing Cauliflower and Cabbage seed; also Mustard and Cress.—R. GILBERT, *Burghley*.

PEAR CULTURE IN MARKET GARDENS.

Much attention has of late years been paid by market gardeners to the culture of Pears, which, if of good quality, generally fetch good prices in the market, and growers are now beginning to discover the importance of growing the best kinds, as trees that bear dozens of large, well-flavoured fruit, pay much better than those which produce bushels of Pears of inferior quality; therefore, as old trees wear out, better sorts are planted to fill their places. Pear trees are nearly the only fruits grown on walls in market gardens, *i.e.*, where walls exist, which is in but few places, and in some cases where these are low the trees are planted on one side, and trained over the top and down the other side. Occasionally they may also be found in the form of espaliers.

CRACKING STOPPED BY GRAFTING.—Pears of the commoner kinds are chiefly grown on the old-fashioned standard run-wild system, no pruning being given but what is done with the saw; and, in a good season, it is wonderful how heavily the trees are laden with fruit. These standards have been "worked" on the Pear stock, which forms a clean stem, the branches usually springing from near the union of the stock with the scion. There are dwarf Pear trees, too, and many that succeed better on the Quince than on the Pear. Market gardeners generally are not, however, very particular about their stocks, for they get the bulk of their trees at the nurseries, and what they graft themselves is usually done on whatever stock they have at hand, be it seedling, sucker, or layer of Pear or Quince. They practise grafting more on old and worn-out trees than on young stocks, and for this purpose they head back the trees in winter or early in spring, either at pruning or digging time; the scions, after being selected, are "heeled in" until March, when they are put on the trees. Grafting more than one kind of Pear on a tree is said to be a preventive of fruit cracking during the swelling period. A large grower near London, who possesses the finest natural Pear-tree soil in the district, states that a somewhat light yet deep, substantial, hazelly loam suits Pears best. In reference to cracking, he found that, although the trees were in a thriving and healthy condition, and annually set good crops of fruit, yet at gathering time scarcely a half sieveful of good marketable Pears could be obtained from them, the fruits being invariably cracked. This induced him to try the effect of grafting more than one sort on each tree, and the result

proved most satisfactory; for, not only did the grafted portions produce excellent fruit, but the original kinds no longer cracked; on the contrary, they produced fruit of exceedingly fine quality, well-formed and symmetrical. Finding grafting in this way successful in a few cases, he extended the practice throughout his orchards; therefore, where one kind of Pear grew alone on a tree, now there are at least three sorts, each apparently being of material benefit to the other; for example, a number of trees, formerly *Beurré Diel* only, now bear huge branches of *Beurré Bosc* and *Louise Bonne*, the trees being furnished in good seasons with large crops of these three sorts. Pear trees are not, however, all tall standards, for some are as dwarf and symmetrical as one could wish to see. Naturally-grown bushes are preferred to rigid French pyramids, as the former bear more fruit and resist wind better than pyramids. Some kinds of Pear trees have naturally a pyramidal habit, which, as a matter of course, is encouraged. Bush Pears are in rows, about 9 ft. apart and 8 ft. asunder in the row, and some are even closer than that. At Mr. Dancer's are some of the finest and most vigorous bush or pyramid Pears on the Quince stock to be found anywhere, and in nearly every case the trees bear large crops of splendid fruit.

VARIETIES.—Among the varieties grown on the above system are *Beurré Hardy*, a clean and shapely tree, and a good cropping variety when well managed; *Doyenné du Comice*, one of the finest-flavoured of all Pears, and one which is very prolific; *Marie Louise*, *Marie Louise d'Uccle*, *Huyshe's Victoria*, and other varieties. *Souvenir du Congrès*, an excellent fruit, raised as a seedling from *Williams' Bon Chrétien*, does well, and bears large, highly-coloured fruits on young-grafted bush trees; these fruits average about two to the pound, and possess a flavour resembling that of its parent, but more aromatic. *Louise Bonne* of Jersey, when cut in well, is very productive. The *Duck's Egg* does well, and is a valuable early market Pear. Of *Williams' Bon Chrétien* no fewer than 100 bushels were sent to market from one garden alone in one day. *Beurré Bosc* is by some regarded as the king of market Pears, on account of its prolific bearing habit and handsomely-formed and large-sized fruits, of fine quality. One of the best Pears that we have seen in the market of late years is one grown by Mr. Wilmot, of Isleworth, named *Pitmaston Duchess*. Some of the specimens of this remind one, as regards size, of the *Belle Angevine* (*Uvedale's St. Germain*), and their flavour resembles that of *Marie Louise*. Some fruits of this variety have been known to weigh $1\frac{1}{2}$ lb. This Pear, therefore, finds a ready sale in the market.

Among early market Pears ripe in July and August may be mentioned *Beurré de l'Assomption*, a large-sized, lemon-yellow kind; *Williams' Bon Chrétien*, *Citron des Carmes*, a medium-sized fruit and an abundant bearer; and *Madame Treve*. These are succeeded by *Belle et Bonne*, *Beurré d'Ananlis*, *Beurré Superfin*, *Fondante d'Automne*, *Gratioli* of Jersey, *Hazel*, *Louise Bonne*, *Louise Bonne* of Jersey, *Marie Louise d'Uccle*, *Autumn Nelis*, and *Seckle*; these keep up a supply till the end of October, after which come into use until Christmas, *Vicar of Winkfield*, *Winter Nelis*, *Napoleon*, *Marie Louise*, *Duchesse d'Angoulême*, *Doyenné du Comice*, *Althorp Crassane*, *Colmar d'Aremberg*, *Bishop's Thumb*, *Beurré Léon le Clerc*, *Beurré Hardy*, *Beurré de Capiaumont*, *Beurré Clairgeau*, *Beurré Bosc*, and *Beurré Bachelier*. Amongst kinds which come into use after the new year has set in may be named *Bergamotte Esperen*, *Glou Moreau*, *Knight's Monarch*, and *Easter Beurré*; many other kinds are also grown for market, but these form the chief supply.

CROPPING BENEATH THE TREES AND STORING.—As with other orchard trees where large Pears exist, the ground under-

neath is cropped with vegetables or bush fruits, but where dwarf pyramids are grown this system is not so much practised; the ground is, however, kept clean by hoeing, and some market gardeners mulch heavily with manure in summer, and in winter the manure is forked into the ground. Most growers dispose of their Pears when gathered, leaving the dealers to find storage room, but in a few cases where good storage can be found at home, they are kept till they are nearly ripe before they are marketed. A great proportion of the best dessert Pears seen in the English markets are imported from France and the Channel Islands. Indeed, California and many parts of Eastern America are likely to play an important part as regards furnishing Pears to the English markets; but the distance and length of time that elapses from the period when the fruit is packed till it is unpacked in England sometimes tells badly in regard to Pears, a circumstance favourable to English growers. C. W. S.

THE FLOWER GARDEN.

ALSTREMERIAS AND THEIR CULTURE.

Those who have never grown these beautiful Lily-like flowers can have no idea what a grand display they make in beds or borders grown in masses, or the great value they are for cutting to furnish vases, in which they stand longer fresh than anything else I am acquainted with, except it be the old and well-known *Calla* and *Amaryllis*, or a few things of that kind, with large porous stems that take up such quantities of water. This the *Alstroemerias* do, too, owing to the peculiar structure of their stalks, which are tubular, and up these it is drawn by capillary attraction, so that the blooms are always well fed. Not only are they very telling in beds and borders, but they are equally effective planted in masses near the margins of woodland walks, where when once they become established they look quite naturalised, and soon take care of themselves. Many of our herbaceous plants may be used to great advantage in this way, especially such as are strong growing, and just at this time of year when they are being overhauled there are always plenty that want reducing, the divisions from which, taken care of and planted annually as they can be spared, soon make a show, and greatly enrich any place and add to its interest. To start with such plants as *Alstroemerias*, however, it is necessary that the ground should be previously prepared by being broken up or trenched, and a supply of plants got in pots for turning out, or sown soon where they are to stand. *Alstroemerias* being difficult to transplant or divide, their stems and tuberous roots penetrating deep down in the earth, and the less they are interfered with the better. A loose sandy soil is the most suitable for them, as, being of a somewhat tender nature, it is essential that they have a free root-run with plenty of drainage; if they can have this and an open, sunny spot, they grow with great vigour, and form magnificent masses studded so thickly with flowers that they are quite a sight to behold. The tubers being just now on the move, the present is the proper time to begin with them, as they travel with safety, and have the whole season before them to get a thorough hold ere the winter sets in. To make them perfectly safe from frost, they should be planted 6 in. deep, and in the autumn it is always advisable to give the surface of the ground a mulching of rotten leaves or any decomposed vegetable matter of that kind, as, being so thoroughly non-conducting, the crowns are then out of harm's way. Unless sown in heat now, or in the open soil as soon as gathered, seeds of *Alstroemerias* are slow in germinating, and often lie dormant a year, which, being the case, the pans or beds they may be placed in should not be disturbed any more than is requisite for keeping them clean. S. D.

Myosotis dissitiflora.—The only way to test the merits of cuttings and seedlings in the case of this *Forget-me-not* is to plant them separately for comparison. I am aware that they grow and flower in favourable seasons tolerably well from cuttings, but not with the luxuriance of seedling plants, which, if procurable in quantity, I would always prefer to dividing old plants; that is only resorted to as a makeshift. As regards Mr. Legg's suggestion that a supply should be struck in frames in heat, I question whether, even if that were practicable, it would be a means of rendering the plants better able to withstand such a winter as that which we have just passed through. We have too many tender subjects already to attempt coddling hardy ones under glass.—J. Groom, *Linton*.

THE ANNUAL PEAS.

The Sweet Pea (*Lathyrus odoratus*).—Of the many kinds of hardy annuals which we now have for embellishing the outside garden in summer, few are so universally esteemed as Sweet Peas. The variation in the colours, from the purest white throughout almost every conceivable shade to purplish-black, the delightful perfume, the facility with which they may be grown, and the many uses to which they can be applied in garden decoration, all contribute to place them amongst the best of annuals. As a temporary screen for shutting out unsightly objects, or for rapidly covering arbours or trellis-work, or as floral fences for the protection of more tender plants, these annual Peas are unsurpassed; and, lastly, but not least, they make charming plants for the wild garden associated with such companions as the Canary Creeper, the various kinds of *Convolvulus* and *Clematis*, each striving as it were to rival each other in beauty. Of late years several well-marked varieties have been raised, as a

one of our rare native wild flowers, which grows on Grassy banks in various places.

The culture of all the foregoing is, of course, of the simplest character; they should be sown from March till June in the open border. They will repay liberal treatment and an open position, which oftentimes they do not get; and if care be taken to leave no more pods on the plants than are necessary for seed, the flowers will be more plentifully produced and the season prolonged. Sweet Peas are also quite amenable to pot culture for greenhouse decoration, and very pretty they are treated in that way. In order to obtain flowering plants earlier than they otherwise would be they may be sown in autumn and protected during winter, when they will flower early in spring. W. G.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Summer Treatment of Double Primroses.—I have been interested with what "S. D." has written (p. 328) respecting the beauty and comparative rarity of these charming spring flowers. It is a fact that, with the exception of the double white and lilac kinds, all others are generally but little known in gardens. For this there is an obvious reason. Few plants are more difficult to keep alive during our hot summer months than the rich crimson, purple, and yellow kinds, and when lost cultivators do not care to replace them. There can be little doubt that drips, generated by a heated, dry atmosphere, is a great enemy to these plants, and that their cultivation anywhere in the southern part of the kingdom is full of difficulty. The only kinds that are reliable are the white, lilac, early sulphur, and the rose, the latter a very distinct large-flowered sort. These Primroses are impatient of frequent removal, and should be undisturbed for several years. Of the yellow kinds there are three, the Giant Yellow, Late Yellow (these two differ chiefly in the appearance of the foliage), and a large form introduced last year from the Continent by Messrs. Veitch. The colour of the blooms in each case is clear straw-yellow. Unless a cool, shady situation can be found for these yellow, purple, and crimson kinds, it is useless to plant them out. Stocks of them are generally obtained from Ireland or the north of Scotland.—A. D.

—It is pleasant to find THE GARDEN recalling the memories of half-forgotten flowers, and doing much to induce people to try and bring them again into cultivation. Its correspondent, who writes so truly (p. 328) of the Primrose, deserves the thanks of those who love the modest beauties of a time gone by. "Old-fashioned" ought not to be a term of reproach in the garden, when loveliness and fragrance are concerned; and those who, while carefully cultivating all that is new and ornamental, would not willingly let die the favourites of the century's earlier days, are doing good service, and are worthy of commendation. A lady, writing in the "Floricultural Cabinet," in May, 1846, enumerates the following very double and most distinct varieties of Primrose as forming her collection: "Crimson, white, purple, straw colour, rose, deep yellow, pink, buff, lilac, and red." The conductor, Mr. Joseph Harrison, in the number for December, 1843, had mentioned "flesh, violet, and copper" coloured varieties. Are these to be had now? Messrs. Rodger, McClelland & Co., Newry, whose collection contains so many rare plants, have got "yellow, purple, crimson, lilac, blush, and rose." If any reader of THE GARDEN, who has got other varieties, would assist in making a complete list, a general benefit would be conferred upon gardens and gardening. My own flower-beds only contain white, yellow, crimson, purple, and lilac varieties, though some years ago several others were to be found there.—WM. JOHNSTON, Ballykilbeg, Co. Down.

Outdoor Primroses.—I heartily commend "J. P.'s" remarks respecting those to the attention of all lovers of hardy flowers, and as we have them in quantity, both double and single in every obtainable shade of colour, I can speak with certainty as to their merits. We have used them largely for table decoration, for, as "J. P." remarks, they are easily arranged in Lycopod or Moss, and look well either by day or under artificial light. For people in London during the early part of the season, a few tins filled with green Moss, in which bunches of Primroses are placed, garnished with their own foliage, form a decoration fit to set before a queen, and the double ones make charming companion button-hole bouquets with just a spray of some other colour. During the present inclement spring the Primrose is nearly the only flower that has been able to brave the wind for any length of time, and our best beds of it at present are those partially overshadowed by the branches of drooping Conifers and Hollies. The shelter of these in winter and their shade in summer form the principal item of success in the cultivation of these lovely flowers. At present, our double varieties are in full bloom, and most beautiful they are; why they are not more generally grown is to me a mystery.—J. GROOM, Linton Park, Maidstone.



glance at any seed catalogue will show, and of these some of the best have been illustrated in the pages of THE GARDEN in the form of coloured plates.

Though none of the other annual kinds of *Lathyrus* can surpass the Sweet Pea, there are several other kinds which make pretty border plants. Of these the best is the Tanger Pea (*L. tingitanus*), which grows about 3 ft. high, and produces small, dark red-purple flowers in abundance. The Chickling Vetch (*L. sativus*) is another pretty kind, with flowers varying from pure white to deep purple. The variety *azureus* is a remarkably elegant dwarf kind, that bears a profusion of clear blue flowers; *L. s. coloratus* has flowers white, purple, and blue; *L. Gorgoni*, which grows about 2 ft. in height, is a very desirable plant, with pale salmon-coloured flowers; *L. articulatus*, *Clymenum*, and *calcaratus* are other pretty kinds, that are quite suitable for flower borders; as is also the Crimson Vetchling, with numerous small crimson flowers and Grass-like foliage. This is

THE KITCHEN GARDEN.

BRUSSELS SPROUTS.

DURING a winter like the past, Brussels Sprouts is by far the most useful vegetable which we possess. Thousands of Broccoli have perished before forming a vestige of head or flower; Cabbages and Savoy's have rotted off their stems, and those which have escaped are "bolting;" but Brussels Sprouts have furnished a supply of excellent food during every day in the most severe weather, and they are now about the only green vegetable to be had in the open quarters of the garden. On this account, therefore, I am growing Brussels Sprouts much more extensively this summer than hitherto, and I would strongly recommend everybody to do the same. Whether large or small, the Sprouts will be found most useful during winter and spring; and, let the weather be what it may, a large supply of Sprouts may confidently be depended on; nor need there be any fear of their failing to come to maturity, or of their becoming useless, if the same attention be devoted to them which is paid to ordinary Cabbage. I know, indeed, of no vegetable that will give so much satisfaction with so little attention. We have some hundreds of them planted out in their permanent quarters now and some thousands in seed-beds. If possible, the plants should be planted where they are to stand not later than the first or second week in May. We have tried them early and late, and find the first week in May to be the best, as when the Sprouts are not well formed and hard before winter weather sets in, they do not swell so well afterwards, nor do they keep so well. When they are fully swelled by the end of October, they will keep as sound and hard as marbles until the following May; and in order to secure such a result, it is well worth trying to get good plants up early in spring.

Our earliest plants were raised in a box in a little heat in February, dibbled into a frame on a slight hotbed in March, and, finally, planted early in April. Our earliest seed, sown in the open border in the first week in March, will be ready to plant in May, and the produce will be covered from top to bottom with fine sprouts by November. Those who have no plants to put out early in May would find it answer their purpose to buy a few hundreds. Some think that Brussels Sprouts may be grown anywhere, and they are right. They may be grown well in odd corners and amongst other dwarf-growing crops; for instance, we plant many of our Potatoes 3 ft. from row to row, and plant Brussels Sprouts between them. When the Sprouts are planted just about the same time as the Potatoes they soon grow up and get well out of the way before the Potato stems have any effect on them, but our best Sprouts are grown 3 ft. plant from plant all ways. This distance may appear great at first, when the plants are small, but when they get up to about 4 ft. in height it is not too much for them, and those planted wide always stand better in winter than those that are close, besides yielding finer Sprouts. Some of ours were planted only 18 in. apart last year, and the ground was soon covered with a mass of foliage, which caused the stems to run up long and weakly, and before the Sprouts were thoroughly formed many of the stems were bent down and lying half their length on the ground. In order to secure the best results from Brussels Sprouts this must be avoided; they should never be planted closer than 2 ft. each way.

A good deep soil, well manured, suits Brussels Sprouts best, and when the soil is poor plenty of good manure placed close to the roots will soon counterbalance other deficiencies. Nearly all varieties of the Brussels Sprout are good when properly cultivated, but preference might be given to Gilbert's Selected Burghley, an excellent variety.

CAMERIAN.

TOMATOES FROM CUTTINGS.

I do not see that either of your correspondents (pp. 296 and 309) mentions this plan of propagating Tomatoes, which, under some circumstances, is a good one. Here, as we need quantities of the fruit as long as we can conveniently have it, we propagate both by means of seed and cuttings, and set the plants about the houses wherever there is room for them. Spare Tomatoes can always be disposed of more remuneratively than most other vegetables. We have to buy large quantities of Newtown Pippin Apples and Jersey Pears while they are in season, the cost of which is largely defrayed by means of the money obtained for spare Tomatoes, which dealers buy readily at about 6d. per lb., and it does not take many fruit to weigh that much.

Our cutting plants were struck last November and are now about 5 ft. high and bearing freely, though the fruit is not ripe yet, and could we spare the house for them I have no doubt they would go on bearing till this time next year. As it is they will be allowed to bear till about Christmas, perhaps. The plants would have had plenty of ripe fruit upon them in February or March if they could have been

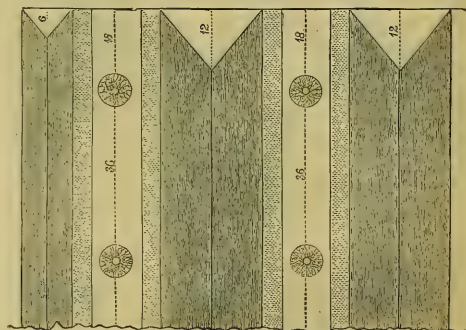
placed in their present quarters sooner, but the house was only emptied at the beginning of March for the Tomatoes, which were at the same time transferred to 12-in. pots from the 5-in. ones in which they had stood all the winter. I think it was at Garston Vineyard where I once saw a large quantity of cutting plants in August that were newly struck for fruiting from Christmas onwards. Cuttings grow almost as vigorously as seedlings, and are more fruitful.

Our seedling plants are now about 18 in. high, and are being placed in vacant spaces about the late Peach houses, as the temperature of these structures gets high enough for them. Tomatoes will grow and bear in any heat, from our outdoor summer temperature to that of a warm stove. In our high and cold situation, however, they never colour out-of-doors, even in the most favourable exposures, unless the plants be put out when the fruit is far advanced, when we find it better to keep them inside. There are generally spare frames or room in gardens during some part of the summer where such subjects can be grown; we have always filled our early Potato frames with Tomatoes about this season, and to keep the fruit from coming in contact with the soil the branches are trained over a few old Pea sticks laid on the bed, and which answer the purpose perfectly.

J. S. W.

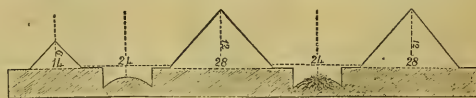
ASPARAGUS PLANTING.

As the season of planting Asparagus approaches, the insertion of this little diagram, showing the open way of planting, may remind



Ground Plan of Asparagus Bed.

our readers of the advantages of that system. The illustrations show, in section and plan, the open mode of planting in a shallow trench without any special preparation of the ground, provided it be of ordinary quality. Any good garden ground, for example, would



Section of Asparagus Bed.

not require manure the first year of planting; a little is given over the roots as the plants get older, the dressing being given in the autumn and washed down by the winter rains.

Variegated Kale.—We send you examples of our Leaf upon Leaf Winter Rainbow Kale for garishing and for flower garden decoration during autumn, winter, and spring. We have many varieties of this Kale, the colours of which are very pretty.—**FREEMAN & FREEMAN, Norwich.** [The specimens sent, pale yellow, purple, and other colours tipped with green, are bright and effective, even after such a winter as that from which we have hardly yet escaped.]

Garden Labels.—I forward to you a label which differs from any other I have seen, and which seems to me to have some very good points about it. 1st. It is cheaper than any other label I know of, and the price, I should say, could be still very considerably reduced if it were made in quantity. 2nd. It has a very pleasant appearance in the flower border. The best part of Mr. Ellacombe's label is reproduced in it, viz., the way in which the name of the plant is written upon it. 3rd. It must be very durable, as the part that is made of wood does not touch the ground. 4th. It keeps an upright position, which is more than other labels have done with me after the late frosts. I saw this label in a rough form in an old-fashioned garden, and I like it so much that for the future I do not think I shall ever use anything else.—**H. EWANK, St. John's, Ryde.** [The label in question consists of a nearly square, thin, wooden head, painted first white and then black. In writing the name the black is pierced through so as to make the letters look white on a black groundwork. Two galvanised wires fixed in the bottom part of the head about 1 in. apart form steady and lasting supports.]

ANSWERS TO CORRESPONDENTS.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

APRIL 22.

The Conservatory at South Kensington held hundreds of beautiful plants on Tuesday last; but, perhaps, the greatest interest was concentrated in the show of Auriculas. These were superb in their way, and the Roses of Cheshunt and Waltham Cross were certainly of the loveliest ever seen at this season of the year. One bloom of the Hybrid Perpetual Madame Liabaud, too, in the choice group sent from the Veitchian collection was deservedly noticed as containing most of those qualities which go to make up perfection in that most perfect of all flowers, the Rose. Hebe might have selected so perfect a chalice, while the colour, nearly white with the most delicate suggestion of flesh in the centre, the fairest of Rose and Lily tints, was combined with a delicious rich and satisfying perfume. Amongst garden plants of tropical origin were many lovely Orchids, Palms, and Ferns—the loveliest of rosy Odontoglossums, with large flowers of satin like lustre, a citron-scented Cattleya, with flowers as bright in colours as those of the finest of all Orchids, *Laelia purpurata*, ever seen, the segments of snowy whiteness, which the lip in itself had much of the colour and beauty of the anemists and ruby combined. A new Lilac, with the largest and whitest of flowers from Lord Londesborough's garden, died in purity with the long petalled blossoms of a *Panacratium*-like plant from the time-honoured gardens at Sion House, which, under the name of *Hymenocallis macrostaphana*, deserves the attention of all lovers of fair flowers. The assertion that dingy colours and grateful fragrance are often combined in flowers is especially true of an Australian shrub of especially graceful and floriferous habit of growth, *Boronia megastigma*, the colours of which are dark brown and dingy yellow, the perfume so distinct and pleasing that no conservatory should be without such a sweetly modest ornament. "The Roaring Moon of Daffodils" has long passed this spring, and April showers, albeit rather cold and ungenial ones, have attended the blooming of these old-fashioned favourites. Of varieties new and old, at least fifty were exhibited, their tints of soft yellow—sulphur, primrose, or orange—and white being most pleasingly represented together with considerable variations in form. Amongst the most noticeable was the large sulphur-coloured variety of the Hooped Peticotat *Bulbocodium*, which, in sweet co-partnership with the blue *Lithospermum prostratum*, crops up here and there in little colonies on the Western Pyrenees, especially near the lighthouse of Biarritz. The seedling Narcissi of the last few years are especially remarkable for their variety in form, colour, and stature, and are welcome to all those fond of outdoor flowers; and the same may be said of the numerous forms of hardy Primrose and *Polyanthus*, both new and old, which graced the show. The snow-white flowers of *Magnolia stellata*, several floriferous examples of which were sent from the Veitchian establishment, were most admired, and its beauty and fragrance at this season, albeit unattended by foliage of its own, will render it a welcome addition to the ranks of half-hardy shrubs, and if fresh greenery be required for contrast with its star-like petals, then the new and beautiful *Adiantum Williamsi*, or the lacinate form of *A. daleyense*, shown by Mr. Smith, of Worcester, under the name of *A. alcinorum*, are both charming Ferns for such a purpose, or some of the pendent, crested forms of *Pteris serrulata*, of which one charming variety was exhibited, may be employed, together with Palms and Cycads for associating with this *Magnolia* and other leafless spring flowers. The groups of decorative plants, comprising Orchids, Ferns, Palms, and forced flowers from the leading nurserymen were much admired. Amongst plants curious as well as beautiful, or otherwise interesting, may be named the gracefully drooping flowered *Hibiscus schizopetalus*, introduced by Messrs. Veitch, the petals of which are recurved into an elegant cup-like shape, and are cut into segments almost as delicate as those of a filmy Fern, the long anther-fringed style adding to the other attractions of the flower. The North American Pitcher plants, or *Sarracenias*, were well represented by plants of *Sarracenia Drummondii* and its white variety, all in the most vigorous health, their long trumpet-like pitchers being in some cases nearly 2 ft. in height, most gracefully modelled, and in some cases richly coloured. A little tuft of *Venus' Flytrap* (*Dionaea muscipula*) bore tall scapes, terminated by rather large and showy Primrose-like flowers of pure white; and the *Mantis-like* or Nautch *Gir-like* *Mantisia saltatoria*, brought by Mr. Green from Sir G. Macleay's garden, gained much attention from those interested in botanical curiosities. One of the most striking plants, however, in the whole exhibition was the specimen of the Giant Viper's Bugloss (*Echium Decaisneanum*), or *E. fastuosum*, also from Sir G. Macleay, the stout stems of which were clothed with stout,

Stokesia cyanea.—With me this forms plenty of flower-heads, but they will not open. My plants are now exactly in the same state that they were when placed in my water greenhouse last October. How should I treat them?—H. BERNY. [The ill-success attending the culture of this handsome autumn-flowering, hardy perennial may, without doubt, be attributed to being placed in a warm greenhouse just at the commencement of the flowering season, for, like many other hardy plants of similar constitution, it hates the stagnant, humid atmosphere of glass houses, and naturally resents such treatment by not flowering. Being a native of Carolina and the Southern States, where a bright, dry autumn is the rule, a close imitation of such conditions is obviously most conducive to its successful treatment; therefore, in order to grow it to perfection, it should be placed in a fully exposed and sunny position in a light, rich soil, and should receive copious waterings during summer so as to encourage an early formation of flower-heads, but artificial waterings should be withdrawn towards the end of summer. In naturally dry localities, a hand-light placed over the plants at the flowering season will be found to be very beneficial, but it should be so arranged that it allows free admission of air on all sides, while it protects from excessive moisture.—W. G.]

Cyclamen Plunged Out-of-doors in the Summer.—I should be glad to know if Cyclamens would do well if their pots were sunk in the ground under a north wall about the middle of May, and left there until they were potted for blooming again; also if it weakens them or otherwise injures them to retain some of their leaves all the year, as last year ours never completely died down; they were then only eighteen months old; also if it is right to set them in saucers of water instead of watering on the top when coming into bloom.—L. E. [The bulbs will do very well if treated as described, but the roots will be better preserved if the plants can be placed in a damp, airy room, and the soil watered off. I have got a few leaves remaining, during the summer indicates a healthy state of the roots, such plants starting strongly. Saucers are not necessary for Cyclamens; they should be watered in the usual manner, not allowing them to remain dry.—W. G.]

Primrose Grubs.—What are the enclosures grubs which devastate my Primroses? I find them embedded in the succulent roots, and the leaves turn brown, and the Primrose decays; how shall I destroy them?—J. O. [What you have sent are apparently the grubs of *Omorhynchus sulcatus*. Searching for and destroying them, and lining the pots with parent weevils which can be found is the most likely way of getting rid of them.—W. W.]

Frost-bitten Roses.—Will any of your correspondents kindly give me a little advice as to the treatment of standard Roses a little injured by this last severe winter?—EUGENE E. F. LEONE, *Court House, Litton Cheney, Dorset*. [Turn back to the first essay that shows signs of sound life.—ARTHUR W. P. E.]

Metal Label Ties.—"W. B." (p. 307) may take it, as a general rule, that all common metals are injurious to plants, more especially copper, which is more easily dissolved than any other, particularly if the juices of the plant are at all acid. To make assurance doubly sure, metal labels should be attached to plants by well-waxed string.—W. W.]

Ants.—Of late my plants have been infested with ants. I have tried to exterminate them by placing pieces of camphor in their runs and a weak solution of paraffin oil, but without success.—T. M. M. [Try the effect of sprinkling fresh gum on the spaces which they most frequent.—W. W.]

Camellia Florida.—I have no more to inform "J. B." that I have a cherry-rose self-coloured sport of *Lavina Maggi Camellia*. I did not notice it before this year.—A. MARTIN, *Cork*.

Names of Plants.—*R. Gill*.—A very bold and richly-coloured *Rhododendron*. We should advise your sending it to some of the Surrey growers and having it tried further north than your own district. *A. L.*—Some *Epidendrum*, but what species the specimen sent does not enable us to say. *J. H.*—*Genthe aspera*. *J. W.*—We do not recognise the leaves alone; send us fresh specimens when in flower. *A. B.*—1, *Saxifraga crassifolia*; 2, Double Primrose (*Primula acutis*); 3, *Polyanthus* variety (*Primula elatior*); 4, *Anemone penicillata*; 5, *Chrysanthemum coronarium*; 6, *Phlox serratifolia*.—*L.*—*Narcissus papyraceus*, var. near *dubius*; 2, *Narcissus moschatos*; 3, too much decayed to determine rightly, but either *moschatos* or *cernuus*; 4, *N. pseudo-narcissus* var.; the scrap of *Sedum-like* plant is *Rhodola rosea*. *E. M.*—Star of Bethlehem (*Ornithogalum arabicum*), *Idem*. We do not recognise any of the leaves of tropical plants sent, and we doubt whether any botanist would like to be responsible for naming plants from leaves only. *J. H. F.*—1, *Salicnella stolonifera*; 2, *Mertensii*; 3, *crasia*; 4, *Wildenovi*.

Names of Fruits.—*J. M. R.*—*Ne Plus Meuris*.

Prickly Comfrey.—Messrs. Carter & Co., High Holborn, will furnish you with plants of this, but probably not seed; they may be planted now.

QUESTIONS.

Cyclamen Sports.—Amongst seedlings of *Cyclamen persicum* I have one plant with seven large, finely-shaped blooms. The first that opened is a beautiful pink with a dark crimson eye; the other six are all pure white, without the least trace of colour on the petals, so that they all spring from one bulb, it is certain, as the bulb is slightly above the soil in the pot and can be distinctly seen. Is this unusual? It is considered here to be quite a curiosity.—H. HARRIS, *Denne Park*.

Bean Disease in the Ionian Islands.—Having recently taken a farm here, my first crop of Broad Beans has shown a disease called here the wolf; a miniature tuberculous excrescence forms on the root of the Bean stock (when about flowering), giving out a thick as my forefinger, and making the plant look like a Hyacinth. It takes all section from the Bean stock, which gradually turns black and dies. Can any of your readers suggest a remedy?—FRED. C. BROWN, *Cork*.

Seedling Cinerarias.—Having this season some very fine Cinerarias, I send half-a-dozen blooms. I raise them from seed, and have about ten dozen, all equal to those sent, at present in the conservatory; their heads measure from 18 in. to 24 in. across.—A. KAY, *Highfield, Middleborough-Town*. [The blooms sent were large, bright in colour, and good both as regards substance and form.]

Rhododendron Blooms on Old Buds.—In lifting *Rhododendrons* for forcing lately we found one with good plump flower buds, surrounded by the seed-pods from last year's flowers. I do not remember having observed the same thing before, but possibly some of your correspondents may have done so. Some plants, such as *Phalaenopsis amabilis* will flower several times from the same spike, and *Hoya carnosa* from the old flower-stalk, but I was not before aware of *Rhododendrons* having the same propensity.—J. GROOM.

lanceolate glaucous leaves, and terminated by dark-blue flowers, arranged in dense spikes of nearly 1 ft. in length. Of this fine species a characteristic coloured plate was given in THE GARDEN (Vol. X., p. 546). Mr. Green informs us that the plant as exhibited was raised from seed two years ago, and wintered in a greenhouse. The plants are also said to enjoy the hottest of sunny positions out-of-doors during the summer months, so as to thoroughly ripen their wood for flowering. Among the plants honoured with first-class certificates on this occasion were *Gloxinia* Mrs. Bause, a large and showy white flowered kind, having a ring of rosy crimson around the throat of the corolla, and the White Lilac (*Syringa alba-grandiflora*) previously alluded to. The show was conveniently and tastefully arranged, and the Azaleas and other decorative plants from the Society's garden, as usual, excellent.

NATIONAL AURICULA SOCIETY.

APRIL 22.

THE southern section of this Society was held, on this occasion, in connection with the Fruit and Floral Committee Meeting of the Royal Horticultural Society, at South Kensington. There were exhibitors from as far north as Yorkshire, but the season has been most unpropitious, and the flowers have been rather unduly forced to get them in flower at the date required. The competition for twelve show varieties was restricted to four exhibitors, the first position being taken by the Rev. F. D. Horner, Kirby Malzeard; Mr. Horner also gained the highest prizes in many of the other classes. Mr. Douglas, gardener to Francis Whitbourn, Esq., gained the highest award in the class for fifty plants, including Alpines, although exhibitors will not include Alpines in such a class if they can help it. Mr. Douglas also exhibited the best Polyanthus of the gold-laced section, the best border Polyanthus being sent by Mr. R. Dean, Ealing. Alpine Auriculas were very pretty indeed, and much more hardy than the show flowers; they will stand out well in the open borders during the severest winters. The best were sent by Mr. Charles Turner, of Slough; two of his new ones, Duchess of Connaught and A. F. Barron, received first-class certificates; they were both of a very refined character, and the edges were beautifully shaded, one of the first properties of an Alpine. The Rev. F. D. Horner exhibited some very choice seedlings, notably a dark self named Ringdove, in which the paste is dense, pure white, and quite circular; Grey Friar, a large grey-edged flower, sent by J. T. D. Llewellyn, Esq., Ynisgyrwn, Neath, also received the Society's highest award. It is noteworthy that, notwithstanding the great efforts being made at present to raise seedlings, the old flowers sent out nearly fifty years ago are still superior to any of them. George Lightbody, Headly, received the prize offered for the best Auricula in the exhibition, certainly a very old flower raised by the late veteran grower of Stapleford. The following were the best flowers exhibited in the different classes; viz., Show Auriculas, green edges, Freedom, Booth; Colonel Taylor, Lee; Admiral Napier, Campbell; Prince of Greens, Trail; Champion, Page; Lovely Ann, Oliver. Grey edges—George Lightbody, Headly; Lancashire Hero, Lancashire; Complete, Sykes; Alexander Meiklejohn, Ray; Charles E. Brown, Headly; Colonel Champney, Turner. White edges comprised—John Simonite, Walker; Smiling Beauty, Heap; Glory, Taylor; Earl Grosvenor, Lee; Ann Smith, Smith; Catherine, Summerscales. Selfs comprised as the best—Pizarro, Campbell; Topsy, Ray; Lord Lorne, Campbell; Charles J. Perry, Turner; Metropolitan, Spalding; Eliza Sims. A few of the best Alpines exhibited were Beatrice, Turner; Susie Matthews, Turner; Mrs. Ball, Turner; Unique, Turner; Sensation, Turner; Mrs. Meiklejohn, Meiklejohn; Diadem, Gorton; Florence, Douglas. The best Polyanthus were—George the Fourth, Exile, Rev. F. D. Horner, Beauty of England, Cheshire Favourite, Lancer, and William the Fourth. Supplementary to the Auriculas and Polyanthus were the usual goodly display of Roses in pots; and also in a cut state Orchids, &c., the whole making a very good exhibition.

ROYAL BOTANIC SOCIETY.

APRIL 23.

A VERY effective display of spring flowers formed the leading feature at this meeting, comprising well-staged collections of Auriculas, Cinerarias, Roses, Cyclamens, Amaryllis, Azaleas, &c., amongst which were numerous examples of high class cultivation.

Botanical Certificates were awarded to the following:—

Odontoglossum odoratum (Veitch & Son).—A new species, much in the way of *O. gloriosum*, but with small blossoms, which exhale a delicious odour.

O. Ruckerianum (Veitch & Son).—A beautiful kind, similar to *O. Alexandrie*.

Dendrobium nobile atro-purpureum (Bull).—A new variety, with larger and more richer-coloured blossoms than the original.

Phaius Blumei (Bull).—A species with large flowers, the sepals of which are buff and the lip white.

Sarcophilus Fitzgeraldi (Veitch & Son).—A dwarf, neat growing species, with an *Aerides*-like habit and rather small flowers white speckled with purplish-violet and yellow centre.

Oncidium Kienastianum (Veitch & Son).—A new, but not a very ornamental species, similar to *O. crispum*.

Phalenopsis Parishii (Veitch & Son).—A curious little novelty, with small blossoms, creamy-white tipped with dull purple.

Kentia MacArthurii (Veitch & Son).—An elegant new Palm, with gracefully-arching foliage.

Geonoma concinna (Bull).—A distinct new Palm, of elegant growth.

Kentia Wendlandiana (Bull).—A new species, with pinnate foliage and good habit.

Catakedozamia Hopei (Williams).—An interesting new Cycad, with elegant pinnate leaves of leathery texture.

Coleus Surprise (Bull).—A pretty variety, with green leaves mottled with creamy-white.

C. Distinction (Bull).—Another ornamental kind, with foliage of a vinous-metallic hue, forming a striking contrast to the last.

Amaryllis Hercules (Little).—Flowers of good form of a fiery scarlet colour.

Auricula Grey Friar (Llewellyn).

A. Unique (Turner).

A. Susie Matthews (Turner).

A. Duchess of Connaught (Turner).

Tulipa Greigi.—This handsome Tulip was shown in a rather poor condition, which failed to exhibit its high-class merit (see THE GARDEN, plate LXIII.).

Primula platypetala flore-plena (Paul and Son).—A charming double Primrose, with flowers of a rich deep purple.

Floricultural Certificates were awarded to—

Azalea Marvel (Bull).—An excellent novelty, very floriferous, though the blossoms are somewhat small, with a tendency to become double. The colour is a rich purplish-rose tint.

A. balsamiflora (Bull).—Another fine variety of real merit, with perfectly double flowers of a rich salmon colour.

A. William Carmichael (Williams).—A kind with rather small flowers of brilliant colour.

Stove and Greenhouse Plants.—The first prize was awarded to Mr. G. Wheeler, gardener to Lady Louisa Goldsmid, Regent's Park, the only exhibitor in the class who staged fair-sized and well-flowered specimens. Six greenhouse Azaleas came from Mr. A. Ratty, gardener to R. Thornton, Esq., the Hoo, Sydenham; a good but inferior half-dozen to the last came from Mr. James, gardener to W. F. Watson, Esq., Isleworth; Mr. Charles Turner also staged excellent medium-sized plants. The class for nine Cinerarias was well contested, and excellent examples of good cultivation were shown by Mr. James, Mr. J. Wiggins, gardener to H. Little, Esq., Uxbridge, and Mr. G. Brightwen, gardener to Lady Clare, Great Stanmore. Messrs. Carter & Co., High Holborn, also exhibited numerous examples of a brilliant strain, remarkable for rich variety in colour and form. Mr. Wiggins showed *Amaryllis*es, the finest being *Hercules*, *Hereward*, and *Morning Star*; Mr. B. S. Williams also showed in this class. Auriculas were shown in excellent condition; Mr. C. Turner took the first prize for twelve; 2nd, Mr. Llewellyn, whose certificated variety, *Grey Friar*, was very beautiful; Mr. James also exhibited in this class.

The Miscellaneous Class for extra prizes was very numerous, including a good display of rare and new plants from Mr. Bull, several of which obtained certificates. Messrs. Veitch & Son also staged a fine bank consisting chiefly of Orchids, the majority of which were new and certificated; a very fine lot of Orchids were shown also by Mr. Heims, gardener to F. A. Philbrick, Esq., Regent's Park. An excellent group of fine-foliaged plants and Orchids also came from Mr. B. S. Williams. Messrs. Paul & Son, of Cheshunt, made an excellent display with well-bloomed Roses in pots, which were much admired, as were also some cut blooms shown by the same exhibitors. *Pelargoniums*, *Cyclamens*, and *Hyacinths* were also shown in good condition, and greatly added to the attractiveness of the meeting.

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SATURDAY, MAY 3, 1879.

Vol. XV.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

SITUATIONS FOR SPRING FLOWERS.

EVERYONE who has a garden wishes to see it brightened up early in the year with flowering plants. The advent of the Snowdrop is hailed with delight, and as the season advances the Daffodil, the Crocus, and the Primrose receive each in their turn a hearty welcome. Spring flowers come as old friends, and, unlike many kinds of plants with which we adorn our parterres in summer, they remain with us the whole year through; and if we cherish them they reward our care by an annual renewal of their pretty flowers. Most of us may have at some time or other visited one of those old-fashioned gardens, now, unhappily, becoming more and more rare, in which dense masses of Daffodils, Anemones, Tulips, and glorious bunches of brightly-coloured Primroses and Polyanthus were to be found growing in wild luxuriance. How finely they grow and bloom under the shelter of old fruit trees, and we may be told that this patch of Narcissi has all sprung from a single bulb planted years ago, and that that mass of Violets or group of Primroses has annually flowered in that same place for a long period. Loving these bright heralds of spring as we do, and anxious as we are to have them amongst us, is it not strange that we do not, as a rule, make better provision for them? Their requirements are small, but they are grateful for even a little care. When placed in hot, dry situations, they cannot exist any number of years in good condition. Where, for instance, do we find the Primrose growing naturally? in sheltered, semi-shady nooks, in woods, in the hedgerows, in well-drained but fairly moist soil. If we wish to make this charming race of plants feel at home with us, we must accord them these conditions. We must take the old-fashioned garden for our model, and we shall doubtless find that there are some spots in our gardens, modernised as they may be to suit the present fashionable style of gardening, which will pretty well reproduce the conditions in which we know that these spring flowers grow so well, live so long, and flower so freely. We have no need to go farther than the so-called shrubbery to find suitable situations for most of our spring flowering plants. When shrubberies are planted, they might be so arranged as to secure plenty of verdure, and at the same time cosy little sheltered nooks might be created, where the Primrose, the Snowdrop, the Cyclamen and many more of our little floral gems might nestle undisturbed by the spade or other garden implement, and where with but little care they would yearly increase in size and blooming capacity. Shrubberies thus arranged would be a source of much interest; the Laburnum, the Lilac, the Laurel, and even Conifers might be made to shelter Violets, Primroses, and similar plants, which would be most grateful for their friendly protection.

Spring flowers, to give satisfaction, should be planted where the soil around them is but little disturbed; they should be seen in masses. A single Snowdrop or Narcissus gives no idea of the real beauty of either of these plants; it is only when thoroughly established and growing and flowering with native vigour that a just conception of their merits can be formed. In many establishments the whole of the flower beds are devoted to summer bedding; it is, therefore, useless to attempt the permanent culture of spring flowers in them. They must either be removed at a considerable amount of labour to suitable summer quarters, or they become stifled and dried up amongst other plants. In large establishments there are always situations adapted for a wild garden, where every condition necessary for successful plant growth may be realised, but many gardens do not possess sufficient scope for this purpose, and then shrubbery borders will be found to be serviceable. A too prevalent custom in this country consists in forming continuous lines of trees and shrubs, which are often so arranged as to present a very uniform, and oftentimes where large quantities of common Laurels and Rhododendrons are planted, an almost unbroken surface. These compact masses of trees and shrubs are scarcely more attractive or offer greater variety than a closely-clipped evergreen hedge would afford. If, instead of this close, formal arrangement, the outline were broken up here and there, forming little recesses, and carrying up the turf at intervals somewhat irregularly between and amongst the shrubs, which would, in any case, be preferable to the formal Grass edgings so often seen, some of the prettiest effects of spring gardening might be carried out. In the little recesses and sheltered spots thus formed, the shade, the shelter, the undisturbed repose, which are indispensable to the well-being of so many of our low-growing, flowering plants, might easily

be accorded them. There, too, every aspect would be obtainable and each individual species and variety would get the position most suitable for it.

How often do we hear the complaint made that so many of our beautiful varieties of Primroses fail to thrive. There is really no reason why, in our climate, they should not succeed; they only need to be placed in natural situations, and they would undoubtedly flourish and yearly increase in vigour. Illustrations have been given in THE GARDEN at various times of groups of Cyclamens, Snowdrops, Hepaticas, &c., in which the results of the judicious selection of natural situations were admirably portrayed. Not only when thus placed do they thrive better, but the arrangement gratifies the eye. One sees at a glance that the surroundings are in accordance with Nature's teachings. We can never err by endeavouring to introduce variety into our gardens, and it is surprising how much may be accomplished, even in small places, to vary their aspect. In the distribution of spring-flowering plants much may be done in this way. There might, for instance, be one nook devoted to the various kinds of Narcissus, in another we could establish Snowdrops and Crocuses, another recess might contain a collection of Primroses, and so on, and during the summer we would have the satisfaction of knowing that they would never be in any way molested, and in the early days of spring we could, as in old-fashioned gardens, wander from spot to spot and welcome our old friends as they appeared.

J. CORNHILL.

Early Violas.—The hardy bedding Pansies which have of recent years been produced—the result of crossing *Viola cornuta* and *lutea*—have proved to be amongst the most satisfactory of spring bedding or border plants. Those that have stood all the winter in the open ground are now fast becoming fine clumps of bloom, and those with mixed Polyanthus and patches of Aubrietias are the most effective of hardy garden plants this spring. Some kinds of these bedding Violas still hold their position as the best of their respective colours, a few others have had to give place to improved kinds, but new sorts have been sparse of late, as it is difficult to improve where there is so little room for improvement. Of white kinds, the purest and earliest is now a sort named Profusion, sent out from Edinburgh, but of summer-blooming kinds the best is Vestal, a southern production; these two excel all others for bedding purposes, and where they are grown none others are needed. Of yellow kinds, the very earliest, and therefore the most useful in the spring garden, is Yellow Boy; it is dwarf, bright in colour, and remarkably free. Bedfont Yellow is another good early variety, and for summer use the best are the old Cliveden Yellow and the paler yellow, Crown Jewel. Blue shades of colour are more abundant. Of these the best are Blue Beauty, a deeply coloured kind; Blue King, royal blue, a charming, delicate, marine blue; the TORY, a deep purplish-blue; Blue Beard, a very rich indigo-blue, dwarf, free, and continuous as regards flowering; and Improved Blue Bell, a most floriferous kind. In the purple section, the old Cliveden Purple is still one of the best for spring, although none of this colour are very early; Mulberry is the handsomest for summer use. Of other kinds, lilacina and rubra lilacina are charming mauve kinds; Harlequin is a pretty tricolor flaked variety; and Peach Blossom is a good reddish-lilac.—A. D.

Shaded Self-Polyanths.—A race of hardy Polyanthus is springing up that will, it is hoped, possess many of the beauties of the shaded Auricula. The flowers are of medium size, good in form, flat, and have a distinct lemon centre, margined by a dark shaded colour; they seem almost duplicates of the shaded Auricula. Plants belonging to this strain differ in all respects from those that are gold-laced, as far as the flowers are concerned, but they resemble them in habit, flowering about the same time. They differ, however, entirely from the fancy or border section, amongst which are some useful sorts, such as white, yellow, red, purple and crimson selfs, and many flowers with varied hues and markings. In the introduction of new strains of flowers of this description, a special impetus must necessarily be given to the cultivation of the Polyanthus, both for ordinary garden purposes and also for exhibition. Many consider that the very refined gold-laced flowers lack variety; the best kinds, also, are difficult to cultivate, and seedlings from them are seldom good, whereas good fancy or shaded strains will invariably reproduce some as good as the parent, and a few, perhaps, better.—A. D.

Sweet Williams after the Frost.—The winter, severe as it undoubtedly has been, has left these quite uninjured; their foliage is fresh and green, and the plants vigorous, showing no evidence of damp or decay. This fact is worthy of being noted, when Stocks, Wallflowers, Antirrhinums, Pentstemons, and other biennials have been killed wholesale. Those who may desire to secure a good display of Sweet Williams next year should at once procure seed and sow it, as it is well to have the plants strong and capable of

producing several heads of flowers at blooming time. Such plants will be secured if seeds be sown at once. The strains known as Hunt's and the Auricula-eyed are both good, and produce huge heads of flower, whilst their markings are varied and beautiful. The finest effect is obtained when they are grown in masses, as the flower-stems not only serve to support one another, thus obviating tying, but also show off the beauties of the bloom to better advantage. The Sweet William is at its best about midsummer, and continues in bloom all the month of June.—A. D.

Violet Culture at Laxenburg.—We have Violets in flower here from November until March. In order to have good established plants before autumn sets in we plant out in May in a bed composed of rather sandy, rich garden soil. The plants used consist either of cuttings, which have been struck in spring, or one-year-old plants which have been kept in pots to flower throughout the winter. After planting out care is taken to keep the soil well stirred, and to peg down any runners that are formed during summer. Occasionally a top-dressing of leaf-mould is given to encourage a strong free growth. At one time we used to shade our plants during the hottest summer months with lattice work, but now we have done away with that, and sow broadcast amongst the plants some seed of the common Dill (*Anethum graveolens*). When up these are thinned, leaving just sufficient to give a slight shade to the Violets. Thus fortified, our beds are exposed to full sunshine, and the plants are undisturbed until they have done flowering, but in November when the blooms begin to appear frames are put over them to keep them from frost. Well-established plants flower, as I have said, continuously from November until March, but a great deal, nevertheless, depends on the weather. During a few hours of sunshine flowers increase rapidly, both in size and numbers. Our plants are only allowed to flower one year; after that they are removed, the best runners are selected for cuttings and put in at once, four in a pot; they are then kept cool and shaded in a frame until they strike root. Generally half of the cuttings thus struck are planted out the same year in May; the other half are shifted into larger pots, in which they are wintered. Generally speaking, however, one set of plants is used as good as the other by the autumn. The Czar is the only variety which we grow.—LOUIS KROPATSKY.

Spring Flowers in Yorkshire.—After so severe a winter as that just experienced, it is most interesting to me to read what is in bloom early in April in open borders; therefore, on the take and give principle, allow me to tell others that I have the following in bloom here to-day (April 10), viz.: *Anemone nemorosa* fl.-pl., *Sanguinaria canadensis*, *Pulmonaria officinalis*, *Scilla taurica*, *S. bifolia*, *S. sibirica*, various kinds of *Hepaticas* (including *angulosa* and the double blue), the *Marguerite Daisy* (cold frame), *Primula denticulata*, *P. pulcherrima*, *Sisyrinchium grandiflorum*, *Hyacinths*, double and single *Primroses* (florists' kinds), *Omphalodes verna*, *Androsace carnea*, *Iris reticulata*, *Auriculas* (Alpine and florists' kinds), *Vincas*, *Draba azoides*, *Chrysosplenium oppositifolium*, *Daphne Cneorum*, *Erica carnea*, *Auricula alpina marginata*, *Jessamine* (double yellow and *J. nudiflorum*), *Hellebores*, *Saxifraga Burseriana*, and, besides these, I scarcely need name the various kinds of *Crocuses*, *Narcissi*, *Arabis*, *Aubrietia*, *Pansy*, *Tussilago*, *Polyanthus*, *Violets*, *Daisies*, and last, but far from least, *Wallflowers*.—J. WOOD, *Woodville, Kirkstall*.

Crown Imperials.—What noble spring-flowering bulbous plants these are! I have groups of them in the borders in front of my house 3 ft. high, each stem carrying whorls of beautiful large drooping flowers surmounted by a crown of lance-shaped leaves, which seem to add to the effectiveness of the flowers. Many of the stems bear six flowers in the whorl, thus showing their strength, as weakly bulbs have only five or, in some cases, only four. Like most spring flowers, they are later in blooming this year than usual. In mild seasons they often flower in March. All the *Fritillarias* are beautiful, and very easily cultivated. Like most of the Liliaceous plants, they flower best when not often disturbed, or if taken up, they should not remain long out of the ground. They are not particular as to soil, but a light deep loam suits them best. What manure is used should be well decomposed.—E. HOBDAV.

Myosotis dissitiflora.—Allow me to inform Mr. Legge (p. 318) that in reality this plant is best treated as a biennial; the seeds should be sown one year to produce flowers the next. Of equal quantities of plants raised from seed and from cuttings, all of the former will live, whilst perchance one half of the latter will die during the winter. It is because of this inevitable fatality that failures so often result to old or propagated plants. If it be desired to propagate by means of cuttings, pull away every available shoot in September, and dibble them out thickly in a piece of ground; each one will make a well-rooted plant in a few weeks.—A. D.

—The difficulties under which your various correspondents appear to labour in growing this most useful *Forget-me-not* are to me inexplicable, for with me it thrives without the slightest

trouble. About five years since I purchased a dozen plants of it for a border, and ever since I have had an abundant supply of self-sown plants of it, besides yearly giving large quantities of it to my friends. With me it is perfectly hardy, and after the severe winter which we have had, the young plants are, if possible, more healthy than usual. I have some single plants of it quite 6 in. across both ways. The border in which they have all along been is in front of a house facing the south, and they are exposed to the full blaze of the sun in summer and to the east winds in spring.—F. J. ALEXANDER, *Fernlee, Gunnersbury*.

Cliveden Blue Pansy.—Amongst the few spring flowers that have maintained their usual character for early flowering must be mentioned this beautiful Blue Pansy. We have many large vases edged with it, and the fine effect which it produces is heightened, as it were, by the dreary weather and general backwardness, or rather absence, of spring flowers, which prevails this season. This variety, so lovely in spring, loses its colour under bright summer sunshine and becomes a pale grey, but for spring gardening it is still unrivalled.—J. GROOM, *Linton Park, Maidstone*.

Fuchsias.—Everything possible must now be done to get spring-struck Fuchsias large in size. A little shade should be given them when the sun is bright to encourage growth and sufficient pot room, syringing freely overhead every day, picking off the flowers and stopping the principal shoots, so as to furnish plenty of branches.—T. BAINES.

LAWNS, CROQUET AND CRICKET GROUNDS.

MESSES. SUTTON & SONS, of Reading, have published, in the form of a circular, the following hints on the laying down and improvement of lawns, &c.: A good close velvety turf is one of the most ornamental objects a garden can boast of, and oftentimes the most difficult to obtain. In the first place, careful preparation of the ground proposed to be laid down to turf is necessary. This should be commenced in the winter by draining, if found requisite, and digging to the depth of 6 in. to 12 in., according to the nature of the soil. The land should then be levelled and made firm with a heavy iron roller, and subsequently raked, to remove stones, &c. Where the natural soil is too stony, a supply of good mould should be spread over it, to the depth of 2 in. or 3 in. If the land is poor, some well-rotted stable-manure will be very beneficial; but where this cannot be obtained the best dressing of artificial manure is 2 cwt. of superphosphate, 2 cwt. of Peruvian guano, and 2 cwt. of dissolved bones, mixed, per acre. In March, after the ground has been made thoroughly fine and clean, a heavy iron roller should again be used to make it perfectly level, and as the subsequent appearance of the lawn depends in a great measure on this part of the preparation, we cannot too strongly urge the importance of its being well done. The ground should then be evenly raked, the seed sown, at the rate of 3 bushels per acre, and the ground lightly covered with fine mould. April and September are the best months for sowing. After this has been accomplished, the ground should be again rolled, and as soon as the young plants have attained the height of 2 in. or 3 in., the whole plot should be carefully gone over with a sharp scythe, and from the months of April to October should be mown every ten days. Frequent mowing and rolling are indispensable to maintain the turf in good order. A close green sward will thus be obtained in nearly as short a time as a lawn produced by turves, while it will be far more permanent, and at much less expense. Ransome's mowing machines are excellent after a comparatively close turf is established; but for the first six months after sowing, we recommend the scythe to be used in preference to the machine. It will sometimes happen that annual weeds indigenous to the soil come up; these can easily be checked, if not destroyed, by mowing them off as soon as they make their appearance. Plantain, Dandelions, and Daisies, too, will often appear, and these must be cut up each one singly about an inch below the surface (not deeper), and about a tea-spoonful of salt dropped over the cut part. Birds are very fond of Grass seeds, and care should be taken to keep them off until the seeds are well up. It often happens that lawns subject to constant use become thin as the autumn approaches. To improve them is easy and inexpensive. In September or March lightly rake the turf, sow some of our fine Grasses and Clovers, at the rate of 20 lb. per acre, apply a thin dressing of mould mixed with some well-rotted manure, or dissolved bones, and well roll afterwards. Moss in lawns is generally a sign of poorness in the soil, or a want of drainage. To effect its removal, rake off as much Moss as possible, apply a top-dressing of quick-lime mixed with rich compost in the winter, and sow more seed in the spring; or a top-dressing of soot will, by encouraging the growth of Grass, destroy the Moss. This should be applied in the spring, at the rate of about 16 bushels per acre. Croquet or cricket grounds, where the turf has become bare through constant use, may be quickly improved and made ready for the next season's use, by sowing seeds

thickly on the bare places during September or March, according to the instructions given above. Whether the turf is bare or not, it will be found generally beneficial to apply during the winter a slight dressing of either well-rotted stable manure, or the mixture of artificial manure before mentioned, at the rate of 2 cwt. per acre, which will greatly encourage the growth of finer kinds of Grasses, and help to produce a close-growing turf. We should not omit to mention here, as in fine garden lawns, that mowing alone will not insure a good bottom, without that compression which a roller alone can give.

PRIMULA GRANDIS.

A VERY distinct Primrose; native of the Western Caucasus, at an elevation of 6000 ft. to 9500 ft. It was described some years ago by Trautvetter from an imperfect dried specimen preserved in the Petersburg Herbarium. Boissier has taken it up in his "Flora Orientalis," with the remark "Species pulchra ulterius inquirenda angustie laciniarum corollæ insignis." It now appears to have been introduced into Russian gardens, and a figure of it was recently published in Regel's



Primula grandis.

"Gartenflora." This Primrose is remarkable for the narrow, erect lobes of its rosy corolla. The accompanying engraving was prepared from the figure in the "Gartenflora," from which some particulars respecting the plant may be extracted on a future occasion. There are no dried specimens of it at Kew. W. B. HEMSLEY.

DOUBLE-FLOWERED DAFFODIL.

We have sent you a couple of flowers of a double Narcissus for inspection; we believe it to be a variety of the common double yellow Daffodil Van Sion, and have named it Ajax major albus variegatus fl.-pl. We suppose it to be new; at least we never saw it before. Perhaps you will be kind enough to give us some information respecting it.

A. E. BARNAART & Co., Bogelenzang.

[The double-flowered Daffodil sent is very beautiful, and although grown in English gardens many years ago, it is now comparatively rare. A characteristic coloured figure of it is given on plate 44 of Hale's "Eden," a fine old work on garden flowers, published a little over a century ago. The variety is there called the Silver and Gold Daffodil, which is a most expressive name, and at p. 517 we are told that "the petals are of a very delicate shining silvery-grey and the cup yellow. This is the

natural colouring, but sometimes the yellow runs in light variegations among the grey, and often the grey in the same manner spreads itself among the yellow; either way, the colouring is extremely singular as well as pretty." As a variety, it is quite distinct, and it is so rare in our gardens that, for trade purposes, it is, to all intents and purposes, a "new" plant. It is a double variety, nearly as large as the common double yellow (N. Telemoniensis plenius of Herbert), but the perianth segments are of a delicate sulphur colour—indeed, nearly white, so that the contrast between them and the rich golden coronal segments is very striking. It is not of the Spanish or N. major race, nor of the race of N. Telemoniensis plenius or Van Sion of Dutch gardens; it is simply a double form of one of the large wild Daffodils (N. Pseudo-Narcissus), near N. bicolor, having whitish perianth segments. We are glad to see that so interesting a variety is yet preserved to cultivation, and should be obliged for particulars of it, so far as may be known to our correspondent. The common name, "Double Silver and Gold Daffodil," would be the best one for it; if, however, a Latin one must be had, then we may recommend N. Pseudo-Narcissus variegatus plenius, or N. Pseudo-Narcissus alboluteus plenius, as being a more correct one than that suggested, which would prove misleading to English cultivators of these favourite flowers.—B.]

THE FRUIT GARDEN.

ORANGE CULTURE AT WENTWORTH.

SOME forty years ago our Orange trees used to be taken to the south front of the castle during the summer months, and were placed during winter in a dark room with only four windows in front to give light; there were then only a few leaves on one side of the trees; at that time the slated roof was taken off, and a glass span-roof substituted. This increase of light caused a slight improvement in the trees. Still, their exposure during the summer, and the cold temperature of the Orangery, where the fire heat was barely sufficient to keep out frost during winter, told detrimentally on the health of the trees; they made weakly growth, and bore a few small Oranges. Seven years ago a large conservatory was built, into which we took the better half of our trees, keeping the remainder in the Orangery, and had it furnished with hot water, so that we could give more heat. The extra warmth which we now give has made a wonderful improvement on the trees, both as regards fruit and foliage. They now bear good-sized fruit, are clothed with healthy leaves, and it is delightful to enter the Orangery when the blossoms are opening early in spring. We give them copious syringings daily during the growing season, and use a compost consisting of fibry loam, charcoal, spent Hops, sand, and a few bones, if at hand. The trees are in tubs, and remain for a number of years after being shifted undisturbed. We give them a night temperature of from 55° to 60° in winter, and about from 60° to 65° in summer, with a proportionate rise in the daytime, according to the state of the weather. The Seville Orange is the kind which we mostly grow, on account of its habit being more graceful than that of the others, and we find that the fruit hangs longer on the trees, on which there is now a fine crop of Oranges, which have been fully ripe six months, and yet look plump and bright. I consider Orange trees to be very desirable subjects for conservatory decoration, and very interesting at all periods of the year, often having ripe and green fruit and blossoms all on them at the same time; in fact, I know of no other plants which elicit so much admiration from all who see them.

I find Oranges very useful in the dull months of winter, when there is not much variety amongst dessert fruits. At that time a good dish of home-grown Oranges, with a portion of the branch on which they grow and leaves attached, is very desirable.

JAMES BATTERY.

[Some specimens of Mr. Battery's Oranges accompanied this communication and were, in all respects, excellent.]

GRAPES FROM VINES RAISED FROM EYES THE SAME YEAR.

I SEE that Mr. Groom doubts my statement under this head (p. 335), and adds that the plan "is certainly something new in Grape culture." I am pleased to be able to answer his questions, and to tell him, however, that the plan is not new, and this was the reason why I did not enter into particulars before. The subject was thoroughly ventilated in the horticultural papers a number of years ago, and has often been alluded to since in THE GARDEN and elsewhere. The plan, which Mr. Groom will perceive, at once disposes of his theory that Vines require a distinct period of rest previous to fruiting under all circumstances, is simply as follows:—Strike the Vines from eyes in March, and grow them on in the usual way till the canes begin to change from green to yellow and the eyes get plump, and at this

stage, but not later, cut off all the leaves and laterals and at once start the Vines in a moist heat, which will cause the permanent buds to break, which would otherwise have remained dormant till another year. This will be about August, and the fruits will be ripe somewhere about the new year, according to the speed at which they have been pushed on. I have often caused the joints of young planted-out canes to break in this way, just by way of experiment, but never forced a regular crop, for the reason that we have always had plenty of good Grapes from midwinter onwards. I, however, once saw a house of pot Vines just starting in this way for a regular crop at Thoresby Park, and Mr. Henderson expected a good crop from them, and they certainly looked as promising as any Vines which I ever saw. The practice is founded upon the fact that Vines, often by too close pinching, break their permanent buds on the current year's canes and ripen a second crop; indeed, it is seldom odd bunches accidentally produced in this manner are not to be found in Vineries, and probably Mr. Groom has observed as much himself without the idea occurring to him that this disposition of the Vine might be taken advantage of under certain circumstances, as has been described. I may add that I did not expect any one to "question the capability of young roots to finish off a good crop the second year of their existence," because the practice is common, but I have not yet heard of any one who has made a practice of leaving their Vines 18 ft. or 20 ft. long the first season and fruiting them the whole length of the rather the second or even the third year, and going on in a regular way afterwards. J. S. W.

STRAWBERRIES ROOTING THROUGH POTS.

ALLOW me to inform "J. S. W." (p. 326) that I did not assert that the rooting through the pots exercised a detrimental influence upon the flowering and the setting of the fruits. What I did say, and what I would repeat, is, that when the plants root through their pots, before the flower-truss is thrown up, it is apt to cause an unnecessary luxuriance of foliage; whereas, if the roots only enter the fresh soil when the flowers are opening, the fruit gets the full benefit of the extra nutriment, and swells up much finer than it otherwise would do. The conclusions at which I have arrived upon this subject are not deduced from theory, but are the results of actual practice extending over a period of years. "J. S. W." will find that in my previous remarks I did not entirely condemn his practice, having myself grown very fair crops on the rooting-through system, but repeated trials have convinced me that better fruit and more of it can be obtained when the roots remain in the pot. By confining the roots to the pot we preserve a complete command over them, and by placing them in pans they can be supplied with an unlimited amount of manure water when swelling off, the saucers often being filled two and three times a day. I would ask your correspondent why he considers it necessary to employ manure water of an offensive character? If he would put a piece of guano in his tanks, or would use soot water, his houses would be free from nauseous smells, and he would find these stimulants sufficiently efficacious for his purpose; nor do they, if used in a clear state, soil either the foliage or the fruit. If your correspondent were growing for profit and could compare the two systems over a period of years, he would, I am assured, find, as I have done, that the rooting through the pots is of no real service, and that good fruit is more easily obtainable when the roots are confined to the pot. As bearing upon this subject, I may mention that we grow a considerable number of Strawberries here planted out in cold frames, and we now make a practice of planting in rather poor soil, and mulching when they come into flower. By this means we secure a compact habit of growth, and, being enabled to plant more closely, we get a much larger yield than when the plants are set in rich soil, the quality of the fruit being in both cases equal. Vicomtesse Héricart de Thury is well adapted for private gardens, as it is naturally a heavy cropper; it sets a large quantity of fruit, and is of an exceptionally good constitution. It is, however, of but little use to market growers for general culture under glass. They would be only too pleased to have their labour facilitated by being enabled to grow such free-growing, robust kinds instead of being obliged to confine themselves, if they desire to make a good price of their fruit, to such varieties as are distinguished by a more delicate constitution. I have been acquainted with several growers who succeeded very well with Héricart de Thury when they failed with other kinds, and it is a variety that I should recommend to those who aim rather at obtaining a fair crop of Strawberries than the production of first-class market fruit. J. CORNHILL.

Byfleet.

Strawberries for Table Decoration.—Strawberry plants^s in fruit are often used for this purpose, though Mr. Groom (p. 355) seems to think they are not. I may mention, however, that indoor

Strawberries, gathered into a sieve and placed in the sun, or near the influence of fire heat, for a certain time, are far more palatable than those which are freshly gathered in a moist house and immediately sent to table.—THOMAS COWBURN, *The Gardens, Sunbury Park.*

Apples Grown for Market in Ireland.—There is no such thing as fruit farming on a large scale in this country such as exists in Kent and other counties of England. The Dublin and other town supplies come from various gardens and small orchards, where there is a surplus after home wants are provided for. It is rather a *mixtrum galthrum* affair, many of the varieties being local, and possessing local names. The varieties, however, which command fairly good prices, and which are favourites with fruiterers are—culinary, Cathead, Echlinville, Kentish Fillbasket, and Yorkshire Greening; dessert, Scarlet Crofton, Irish Peach, Eve Apple, Margil, and Ross Nonpareil.—AMBROSE BALFE, 28, *Westland Row, Dublin.*

Golden Champion Grape near Bristol.—The additional facts furnished by Mr. Baines on this subject (p. 334) are very instructive. Golden Champion Vines started in January with their roots outside in the neighbourhood of Bristol were not in flower at near the end of March, and I venture to guess the bunches of these same Vines are not much more than thinned, if they are that length, at this date (April 26). Now, here, Golden Champion Grapes with their roots all inside were started a month later than those at Bristol, and were equally advanced at the end of March, and the berries on some of the bunches are the size of small Peas; bunches of Hamburgs in the same house are ready to thin. Muscats started early in February are now coming into flower, and a few bunches are set and swelling. The roots are outside principally, and all are under fermenting materials. The Muscat, I may point out, is about a month later than the Champion. It would appear, therefore, that we have saved a month or more in fuel, labour, and attention in our case by treating the roots to the necessary warmth, not to speak of the advantages of the practice in other ways. It is a mistake to transfer the question of protected borders for early Vines to the subject of late Vines that ripen their crop after midsummer, and this is all I wished to point out before.—J. S. W.

FRUIT CULTURE FOR MARKET.

PLUMS.—These are chiefly grown in market gardens in the form of standard and dwarf bushes. Standard Plum trees are planted from 15 ft. to 20 ft. apart each way, unless vegetable crops or bush fruits are not to be grown between them, in which case they are planted more closely. The more room the trees are allowed, however, the more perfectly does the young wood ripen, and heavier crops of better quality are the result. Where vegetable crops are grown between Plum trees it is absolutely necessary, owing to the surface-rooting character of the trees, to deeply dig the ground every year, inasmuch as were this operation neglected one year great danger to the roots would ensue, but when done yearly over-luxuriant growth is prevented by continuous root-pruning, and yet the roots, being small, the trees are not injured by their being cut away, as would be the case if they were allowed to become large before digging between the trees was performed. Annual manuring and deep culture render the trees very productive, and unless the bloom gets injured by spring frosts, thinning of the fruit several times over has to be resorted to, in order to insure a fair crop ripening satisfactorily; after this operation has been performed, no other thinning takes place, and sometimes in good seasons may be observed large trees with their branches supported on wooden props, in consequence of the weight of fruit being more than they could bear without fear of breakage. Princess of Wales, Coe's Golden Drop, Victoria (Blue and Green Gages, Jefferson, Orleans, Kirk's) Washington, Magnum Bonum, Royal Hative and Belle de Septembre, are all kinds extensively grown in the neighbourhood of London. An acre of good Plum trees has sometimes been worth as much as £50, the purchaser being at the expense of gathering the fruit; at other times, however, in consequence of over-abundance of fruit, prices in Covent Garden are remarkably low, common Plums being often sold

for 1s. 6d. per bushel wholesale. Plums are not so much in demand for preserving as some fruit, hence the low prices just referred to; and so imperfect are as yet the means of communication between producer and consumer, that frequently when this kind of fruit is so cheap, it brings so low a price to the grower that it is scarcely worth his while to gather it, and sometimes large quantities are allowed to rot or are given to pigs. The stocks used for Plums are the Brompton or free stock, the Mussel and the Myrobalan. The Prince of Wales Plum is grown by the ton, but heavy losses are often sustained by trees of it dying off. Some attribute this to imperfect union with the stock, others to the soil, and some to the heavy cropping of the trees. The Purple Gage is largely grown on account of its vigorous habit and prolific bearing qualities. It is sometimes called Poupart's Plum; its fruit is about the size of the Green Gage and similar in flavour. Another good culinary plum is Pershore, the fruit of which is yellow, and the trees of it enormous croppers. Belle de Septembre is another favourite Plum, which in some seasons has fetched as much as 26s. per bushel. The Red Compote is a good late kind, which resembles the Victoria, and which in Covent Garden is valued highly, because it comes in late, keeps well, and generally fetches good prices. Well-established trees of it yield enormous crops, even more than the well-known Victoria. Other good standard varieties are Pond's Seedling and Mitchelson Plum, the latter being grown by the acre by some growers. Its fruit, which is excellent for preserving, is of a reddish-purple colour, of medium size, and good flavour. To these many more kinds might be added, but those enumerated are such as are generally grown near London by the best cultivators for market. "Growers in Kent," says Mr. Whitehead in the "Royal Agricultural Society's Journal," "prefer the forward Orleans, Magnum Bonum, Blue Diamond, Victoria Dauphin, Mussel, Early Rivers, and Washington; black Plums sell the best. The trees are planted between Cherry and Apple trees, and are set in plantations by themselves with bushes under them. A tradition exists that £100 per acre has been made in one year on a piece of land planted with Green Gages. The average price of Plums in London is £19 per ton. In 1876 they made from £28 to £32 per ton, in 1871 only from £12 to £14.

There is a famous Damson known in Kent as the Critenden, that has been planted to a large extent during late years. It is propagated by suckers, or "spawns," which come up all round the trees, and yield fruit after their kind without being grafted. After these suckers have been planted out for two or three years, they commence to bear. This kind of Damson is amazingly prolific, and its fruit brings high prices for jam, bottling, Damson cheese, and, as some say, for manufacturing port wine. Plum trees, like Cherry trees, do not require much pruning; on the contrary, they are apt to fall into ill health if the knife be used too freely. It is merely necessary to cut back any over vigorous growths, and to clear out wood that crowds up the centres of the trees. Plum trees do not succeed well in exposed situations, as their roots are so near the surface that they are liable to be blown down by the wind."

Damson trees are now but comparatively little grown in the immediate neighbourhood of London, and as old trees die out young ones are seldom planted in their stead. In Kent, however, they appear to grow wild like the common hedge Bullace, and I have seen the lanes literally overhung with heavy-laden boughs of black fruit. One Kentish grower informed me that if his Damson trees were placed in a line 30 ft. apart, they would occupy a length of twenty-two miles.

FIGS.—These are seldom to be found in the London market gardens, but in the vicinity of Worthing large fields are

entirely devoted to their culture. The trees are chiefly grown in the form of standards, and the soil in which they are planted being of a light clayey character they succeed remarkably well, and in favourable seasons bear heavy crops of fruit. In some Fig orchards there may be counted as many as from 150 to 200 standard trees of great age; indeed, many of them are supposed to have been planted more than 100 years. From each of these trees, in good seasons, are frequently gathered as many as 20 dozen of fine ripe fruit. Fig crops vary very much both in quantity and quality, in accordance with the season, but in hot, dry summers may be seen scores of men, women, and boys busily engaged in gathering the large luscious fruit, and packing them in baskets and boxes ready for Covent Garden Market.

CHERRIES.—These are not very extensively cultivated in what may be termed the metropolitan market gardens. In some places, however, they find a place and succeed tolerably well. The best trees are grown in the form of dwarf, open-hearted standards grafted on the Mahaleb stock within a few inches of the ground, conditions under which they thrive well and bear heavy crops. Vigorous-growing sorts, such as the Bigarreau, are, however, grafted on seedling Cherry stocks. Very little is done in the way of pruning, excepting in the case of dwarf trees, which are kept within bounds by frequently shortening back the young vigorous growth. Tall standards never receive any pruning whatever beyond cutting out old and decayed limbs, the young growth being allowed to grow at random. Knight's Early Black, May Duke, Elton, Late Duke, Kentish and Black Heart are the kinds chiefly grown, although the Bigarreau is by no means neglected where it is found to succeed, and the same remark applies to the Brandy Cherry (the Morello). This, in the form of standards about 6 ft. high, and bearing heads from 6 ft. to 8 ft. in diameter, fruits freely, and in seasons when most other kinds get cut by spring frosts, Morellos grown in this fashion invariably escape. They are grown amongst large Apple or Pear trees, which, to a great extent, protect them. The only pruning they get is removing dead or useless branches.

In Kent Cherries are chiefly grown in Grass orchards, in which the trees are managed on the run-wild system; many of them are very old indeed, and in good seasons they yield heavy crops. When in flower the Kentish Cherry orchards are well worth seeing, covering, as they do, the distant hills for miles round; though in some years the quantity of blossom is unusually great, the crop of fruit may be far below the average. Cherry trees are planted on land overlying a dry subsoil; in clayey soil they are, as a rule, but short-lived. The kinds chiefly grown are the Kentish, Cluster, and Bigarreau; these are good croppers, and from well-established trees have frequently been gathered as much as 1000 lb. of good fruit. In some seasons the Cherry crops are sold by auction, and also by private contract, the purchaser paying the expenses of gathering; this is supposed by some to be the most profitable way of disposing of them. The buyer erects a wooden shed, in which the daily gatherings are put, and when all are gathered they are sent to market as soon as possible. An acre of good Cherry trees sometimes yields from £30 to £40, which, considering that there is no expense attached to their culture, and that the Grass underneath can be eaten off by cattle, is by no means unprofitable. Some of the more intelligent fruit growers think that it pays better to gather and market their fruit themselves, their trees in this way being less injured and a better price being obtained for the produce. The cost of picking and marketing Cherries is about 3s. per sieve, and of this sum about 1s. 3d. goes for picking and 1s. 2d. for carriage and marketing expenses. The additional 7d. is expended in sieves, ladders, and other necessary appliances.

NUTS.—A few cultivators near London grow Nut trees, but the chief supply is from Kent. There the plants are trained up with a single stem less than 1 ft. in height, after which the branches are tied outwards to a wire or wooden hoop, so as to give them a cup-like form. All shoots rising from the centre are removed during summer. The advantage of the plants being trained in the shape just alluded to is that it admits sunlight into the centre of the plants as well as elsewhere. Sometimes a plantation of Nut trees occupies several acres in extent, the trees being fully 14 ft. in diameter, and not more than 5 ft. high at the outside. Severe pruning is adopted to keep them within bounds, and all suckers are carefully removed every year. The small wood of the previous year's growth produces the fruit, and short spurs of this are only left in winter, all gross and fruitless shoots being entirely cut away. The trees are, as a rule, to be found alternately planted with standard Apple or Pear trees, and when Apples and Pears are scarce a fair crop both of Cobnuts and Filberts is often secured. On the Kentish ragstone Filberts and Cobnuts are more grown than bush fruits. The soil just suits them and they bear abundantly. The Cobnut is more productive and profitable than the Filbert; the Nut is larger, but not so well flavoured as the Filbert, but the tree gets quicker into bearing. Sometimes a single tree, well established, has been known to bear 40 lb. of Nuts, and over £100 per acre has been made. The trees are generally planted about 16 ft. apart each way, and the pruning of them requires considerable skill and care; this is performed by men used to the work, the usual prices ranging from 2d. to 3d. per tree.

C. W. S.

THE INDOOR GARDEN.

THE PAPAW TREE.

(CARICA PAPAYA.)

THIS, with the exception of the Guava, has perhaps a wider distribution than most exotic fruit trees, being found wild nearly everywhere in tropical and sub-tropical countries, although it is now generally believed to be of South American origin. It forms a very ornamental tree in tropical gardens, and its fruits are occasionally eaten, but they are not much esteemed, not even by the natives, and still less by the majority of Europeans. It forms a small single stemmed tree, of a succulent character, 8 ft. or 10 ft. in height as a rule, although sometimes in old examples the stem is as thick as a man's body, and branched towards the top, where each stem or branch bears a crown of long-stalked, seven-lobed leaves. The individual leaves often measure 2 ft. across, and, in addition to their beauty, form a by-no-means-to-be-despised substitute for soap. The fruits, which are 8 in. or 10 in. long, by 4 in. or 5 in. broad, resemble a small Melon in size and shape. Even when cut open the likeness to a scarlet-fleshed Melon is a very close one, but the seeds are round, black, and wrinkled, resembling at first sight the pitted seeds of some of the Granadillas or large-fruited Passion Flowers. The pulp is soft and cooling, and when perfectly ripe, not unlike that of an Apricot in flavour. When plucked green, the full-grown fruit forms a substitute for Turnips, or it can be made into an agreeable sauce or preserved with sugar.

Like the Orange, Banana, Cocoa-nut, and other tropical fruits, this tree bears flowers and fruits in all stages of growth during the whole year. It is dioecious, that is to say, the male and female flowers are borne on separate plants. The male flowers are produced on long branched spikes or racemes, which grow from the axils of the leaf stalks, and are gamopetalous and tubular, being much smaller than the female flowers, which are generally solitary and large. They have a corolla, consisting of five distinct petals, and they are borne on stalks only an inch or so in length. In some cases, small abortive fruits, the size of hens' eggs, may be seen hanging from the male trees as though rudimentary ovaries had been formed in some of the male blossoms. Male flowers have not to my knowledge been noticed on the female or fruiting trees, which is the kind here represented. Throughout the West Indian Islands, where this plant is common, an infusion of the fruits or leaves, or a mixture made from the juice of the plant, is said to possess the virtue of rendering the toughest meat or poultry perfectly tender if they are immersed in the fluid, or even if

merely suspended in the tree itself for an hour or two. Recently, too, I read in a contemporary that chisels and other edged tools if too brittle might be softened by being driven into the soft stems or branches of this tree, and that this was practised by some of the natives of South America with the desired result. Other still more wonderful effects were said to belong to it.

Our illustration represents the general habit of a young fruiting specimen in company with another universal tropical product, the Sugar Cane. This, although not a fruit, and its fleshy stems being simply natural sugar sticks, is far more popular for eating or chewing wherever it is grown than most fruits. Although a native of the East Indies, it is like many other cultivated plants now naturalised in most tropical and every inter-tropical country. There are many varieties, but most of them produce jointed canes of bright golden colour, varying in height, thickness, length of the internodes, and quantity of saccharine matter produced. There are also several red, black, and purple-stemmed sorts, and one variety grown in Spain is called the "Elephant Cane," in allusion to its gigantic dimensions. Both the Papaw and Sugar Cane may be seen in cultivation at Kew.

F. W. B.

BEGONIA INGRAMI.

SOME years ago I grew this Begonia, but not finding it at all equal to be *B. semperflorens* Saundersi for winter-flowering I discarded it in favour of the latter, which is altogether less stiff and more graceful in habit. So free blooming is it that plants in 3-in. pots may often be seen laden with flowers, which appear at almost every joint, and, the colour being bright red, they have a particularly cheerful appearance. This fine variety was sent out by Messrs. Garraway, Durdham Down, near Bristol, and was much thought of in the west of England for a long time, where it was largely grown for exhibition purposes. Some time since I used to depend much on it for decorative purposes during the summer, and employed it for filling a pair of large elevated vases in a conservatory, where, from its position, it always produced a most striking effect. The new tuberous kinds are now so showy that *B. semperflorens*, good as it is, cannot be compared with them; but as these cannot be had during winter, I am always glad to fall back on *B. semperflorens*, which never fails me at that season. A good companion to it is *B. nitida*, a free flowering kind not nearly so much grown as it should be, and the same may be said of *B. insignis*, another capital plant, requiring but little heat to keep it in health. To succeed these, and come in later in the spring, *B. manicata* has no equal, its five pale pink panicles of bloom being such as to command admiration. Cut and placed in vases among flowers, nothing imparts a better finish; but to have it in a condition to last, it is necessary that plants of it be kept in a cool light stove, with their heads well up to the glass. This stiffens the stems, and imparts to the plants a more enduring character, as well as improves the colour, making it several shades darker. I should think, by crossing some of the tuberous-rooted kinds with the varieties just enumerated, we should soon get kinds that would bloom naturally in an intermediate temperature during winter; at any rate, the experiment is worth trying, and, if successful, the strain would be of great use in rendering our houses and windows gay at that dull season when there is little in the floral way to cheer.

S. D.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Lonicera Standishi.—What your correspondent states (p. 324) in favour of this shrub is perfectly true, but, good as it is, *L. fragrantissima* is far better, its habit being more floriferous, and the perfume, as its specific name implies, of the sweetest description. One or two plants of it on a stage will scent a whole house; therefore, it is a most desirable plant to have under glass, for, except in mild winters, and when grown against a south wall, or in some similarly sheltered situation, it is very rare that it is seen in perfection. This season it has a very weather-beaten look, and its blossoms have been kept back to an unusually late period; in ordinary winters they are fully expanded by Christmas, whereas this year we had but very few till quite the end of March, and then they appeared to all rush open at once. I find that there is a great difference in the habit and general appearance of plants grown against the front of a building from others in shrubby borders, as in the former they make short, sturdy shoots from spurs which are so short-jointed as to be completely studded with flowers, while those in the latter situation make more wood and do not bloom with anything like the same freedom. In pots they do best, with the young growths kept nipped in as they are formed, a mode of treatment that increases the number of small twiggy branches to a great extent, and if these be well ripened by full exposure, each of them will bear a very large

quantity of flowers. To those engaged in bouquet making these are of much value for mounting, for, although small, they impart a refreshing perfume.—S. D.

Stokesia cyanea.—The cultural directions given for this plant (p. 345) are, according to my experience, quite correct, but simply protecting the plant when in flower in the open ground does not enable the grower to fully realise its decorative value. I would recommend Mr. Burney to take the plants up when the buds are matured and place them in the greenhouse, where they may be enjoyed in all weathers. The *Stokesia* succeeds well when thus treated, and although it has a somewhat faulty habit, the individual blooms are pleasing, and the colour is just what is wanted in the early winter months. If a quick, free, early growth be encouraged the flower-heads will mature early, and the buds will expand perfectly well when placed in a glass structure and treated in the same manner as *Chrysanthemums*. The value of the plant is imperfectly known in private gardens, where it should be grown by those who require much bloom for cutting during the late autumn and early winter months, as it may, by treating it as above described, be had in flower until late in December.—J. CORNHILL, *Byfleet*.

Pimelea decussata.—Many of the *Pimeleas* are not suitable for small growers, as they require considerable skill to be expended upon their culture to bring them to perfection. The present species may, however, be grown by any one who has a glass house, and its habit being neat and compact, and the flowers bright and produced in great profusion, it can scarcely fail to give satisfaction. It should, after flowering, be potted in sandy, fibrous peat, and be placed in a cold frame. It should be syringed and kept rather close until growth commences, when more air may be given. Full exposure in the summer and autumn is necessary, in order to solidify and mature the wood. Cuttings made of the half-ripened wood will strike easily under a bell-glass in silver sand.—J. C., *Byfleet*.

Cutting Asparagus.—As Asparagus is now ready for cutting, let me ask your readers to allow the earliest of the stems to grow up from the first, and to only cut those which push through the ground afterwards. The plan so often recommended of not allowing any of the stems to grow up until cutting has ceased, at the end of the season, is, in my opinion, the worst that anyone could possibly put into practice. Early growth and a long season induce perfect development, and to this rule Asparagus is no exception. The earlier the stems which have to stand during the summer are up the more thoroughly do the crowns get ripened in autumn; and this is no small advantage, especially when the roots are intended for early forcing. Not allowing the shoots to grow up until the middle of June must certainly be anything but beneficial to the plants. Moreover, the first stems are generally the strongest, and the last the weakest; therefore the latter are by no means the fittest for improving the condition of the plants. I find that by allowing about four of the first and strongest of the shoots to grow up from each root the plants are improved in every respect, and doing this does not interfere in any way afterwards with the quality of the shoots which spring up for cutting.—CAMBERIAN.

Market Garden Notes.—Rarely have the outlying market gardens presented such a bare aspect as they do now. Green crops of all kinds are sparse, and what are growing look thin and lack strength. Just now Turnip-tops are the only crop available for market. Breadths of other greens have succumbed to the frost, and white Broccoli not yet ready for cutting is thin, and has been much injured. The season continues so cold and gloomy that early-sown seeds are doing badly, and those that have grown move so slowly,

that they fast fall a prey to slugs, that, in spite of a hard winter, are evidently just as numerous as ever. Of all summer crops, perhaps, amongst vegetables, the Pea crop is the most important to the grower. Early-sown breadths have in some places done so badly, that they are being ploughed up and fresh seed sown. Other sowings are very thin, and it is only the latest that present a promising appearance. Late kinds have, to some extent, the start of the early ones, and the result will be that we shall see two or three sowings all becoming fit to gather at the same time, much to the loss of the grower, who looks to the earliest pickings from white sorts to secure the best market prices. If the white varieties are found to be only even in earliness with the blue, the latter will alone sell at a profit. Next to having no crop at all, no greater misfortune can happen to the grower than the accident of a glut in the market, as expenses of seed, growth, gathering, and marketing are calculated on a fair price, and if this be not attained a serious loss is the result. Potatoes

have been largely planted, but in consequence of the coldness of the soil none of the earliest are yet above ground. It is just possible that many of the cut sets will have rotted, and that thin rows will be seen presently. With such a cold, late season as this is, the middle to the end of April is quite early enough for planting large breadths of Potatoes.—A. D.

Vegetation in Durham.—A stroll through the woods hereabouts in search of wild flowers has sadly disappointed me. I had expected to find Primroses in abundance, instead of which I found scarcely any. Vegetation is fully six weeks later than it was last year. Then Primroses, Wood Anemones, Ribes, and other flowers were plentiful in March; this year Primroses are scarce in the last week of April; there are no Wood Anemones in bloom yet, and the buds of the Ribes have not yet expanded. Even the handsome little Pilewort (*Ranunculus Ficaria*)—the favourite flower of Wordsworth—which is often seen in February, has not yet become general. The catkins on the Hazels were very pretty a few days ago, as were also the large quantities of minute female flowers. If the present dull weather does not prevent their setting, we shall in all probability have a large crop of Nuts. The Peach blossom on walls has not yet opened, while last year it was in full bloom when that memorable storm of snow and frost set in, on the 1st of April. Although we are within a day or two of the "merrie month of May," the cuckoo has not yet been heard, nor is

there any well-authenticated record that the swallow has been seen. Altogether, the "proud pied April" of the poets has been little better than its predecessor—March. If the habits of birds form any guide as to the probable state of the weather, I am afraid that we are not yet quite "out of the wood," as I saw to-day a number of fieldfares, which have not yet left us, almost a sure sign that there is more bad weather in store for us.—TYNEDALE.

Effects of the Winter in Hants.—The following are the names of a few plants which have suffered severely here during the past winter, namely, *Buddleia globosa* and *B. Lindleyana*—the latter killed altogether; *Desfontainia spinosa*, and the different kinds of *Euonymus*—the latter and the Double-flowered *Furze* killed to the ground. One or two Japan Privets are also damaged; likewise *Berberis Darwini*. The Judas tree (*Cercis Siliquastrum*) seems to be killed, and the *Laurustinus* and *Arbutus* are much damaged, and some of them are killed to the ground, although many of the latter were 10 ft. in height. A strong plant of *Magnolia Lenne*, planted last autumn against a south-east wall, and protected with Spruce Fir branches, has been killed. *Pentstemons* are also all dead that were left out, and *Fuchsias* are all likewise killed. Some herbaceous plants, too, have suffered; all the *Antirrhinums* are killed; two



The Papaw Tree (*Carica Papaya*) in Fruit.

plants of *Primula cortusoides grandiflora*, left out to test their hardiness, are almost dead; and *Francoa ramosa*, in a cold pit, is much injured. The blossoms of Pears on south walls are just expanding; also those of Plums on west walls. There is a good show of bloom on all kinds of fruit trees. The nightingale was heard on the 21st, and the cuckoo on the 17th.—J. C., *Furnborough*.

NOTES FROM KEW.

Hardy Plants.—Amongst the numerous varieties of Daffodils now in flower, the little kind known as Graells' Daffodil (*Narcissus Bulbocodium* var. Graellsi) is particularly noteworthy, as it is, with the exception of the beautiful single-leaved kind (*N. monophyllus*), the most distinct of all the Hoop-petticoat group. It grows about 4 in. high, with a spreading crown of blossom about 1 in. long, and of a pale yellow tint. It inhabits various parts of Spain, whence it was introduced to us a few years since; but, as yet, it is amongst the rarest of cultivated kinds. The Mountain Daffodil (*N. montanus* or *poulliformis*) is a desirable sweet-scented kind; its large and almost white blossoms, which droop in a singular manner, distinguish it from its neighbours. The Large-flowered Erythronium (*E. grandiflorum*) flowers just in time to succeed its better known congener (*E. Dens-canis*). It grows from 6 in. to 12 in. high, and has narrower and not so prettily marked leaves as those of the last-named kind. Its blossoms are 1½ in. across, and have narrow, reflexed petals, pale yellow, with a ring of reddish brown at the inner base. It is a native of Scotland, and is perfectly hardy. The round-leaved Thlaspi (*T. rotundifolium*) is one of the most pleasing Alpines at present in flower. It at once reminds one of *Iberis* gibraltarica in miniature, bearing, as it does, numerous heads of small blossoms of the same delicate mauve tint. It is procumbent in habit, and has small roundish leaves of a fleshy texture. It is an old introduction from the European Alps, though now of rare occurrence in collections. The Alpine variety of the common *Gentiana acaulis* is a charming plant. In the Kew specimen it may be at once distinguished from the type by the conspicuous pure white tips of the angles of the corolla, a character which tends to intensify the rich deep blue of the rest of the blossom. Very few of the *Fritillarias* produce showy flowers, though the strikingly curious markings to be found in the flowers render them suitable plants for the flower border. The best of those in flower are *F. tenella* (syn. *montana*), a species with narrow, glaucous leaves and nodding flowers, globular in form, with peculiar checkered markings of green and red chocolate colour. *F. glaucescens* so nearly resembles the last, that the distinguishing points are scarcely definable. *L. lilacea* is very distinct; it has broad foliage and large, reddish-brown, drooping flowers. *F. latifolia*, another broad-leaved kind, is similar to *F. Meleagris*, but inferior to that kind in point of beauty. The purple-flowered form of *Primula ciliata* is by far the most attractive of the *Primroses* now in blossom; the deep, rich purple of the flowers relieved by the bright golden eye at once elicits admiration. It is very similar to the kind known as *P. intermedia*, of which we gave a coloured illustration in THE GARDEN (Plate XXVIII).

Greenhouse Plants.—The New Zealand *Veronica Hulkei* is, without doubt, the finest of all the Speedwells for greenhouse decoration, though it is not nearly so well known as it deserves to be; indeed, the delicate lavender colour of its blossoms is so unusual that it would be difficult to name another plant of so pleasing an aspect. It is rather loose in habit, growing from 1 ft. to 3 ft. high, and it has scattered, small leaves. The flowers are borne on terminal, branching panicles in great profusion, and continue for some weeks in beauty. The dark-leaved form of *Scilla natalensis* named *sordida*—noticed last week—is no less beautiful than the original, though the pretty star-like flowers are not produced so thickly. The Fragrant *Rhododendron* (*R. fragrantissima*) is one of the most beautiful which we have seen at Kew this season. It is similar to the lovely *R. Veitchi*; its flowers are nearly as large, and they are of the same pure white as in that kind, and sweet scented. This is a variety that should be sought after for conservatory decoration, as it flowers well in a small state and is easily managed. The Conservatory No. 4 is now gay with Australian plants, amongst which the Pea family is of course predominant. Amongst these *Pultenaea rosea*, with pretty rose-coloured clusters of flowers, is very desirable, as it lasts such a long time in perfection; *P. stricta* and *Eutaxia myrtifolia* are other fine kinds, which bear abundance of showy yellow and dark red flowers. The various kinds of *Adenandra* are also very attractive plants; *A. umbellata*, with deep pink blossoms, 1 in. across, and *A. fragrans*, with blossoms of about the same size, but white and fragrant, are the best. Amongst plants in flower in the Temperate House the most conspicuous is *Rhododendron Aucklandi*, from the Sikkim Himalayas, certainly one of the most beautiful from that region. Its blossoms, which are very large and funnel-

shaped, are pure white, and, being subtended by numerous membranous, magenta-tinted bracts, they are very effective.

Stove Plants.—The large-leaved *Rudgea* (*R. macrophylla*) is a magnificent stove shrub introduced about a dozen years ago from the vicinity of Rio de Janeiro. Its handsome leaves measure over 1 ft. long, and they are proportionately wide. In colour they are a very deep green, which contrasts finely with the snow-white heads, from 4 in. to 6 in. across, of blossoms, which terminate each stem. The individual blooms are 1 in. long, tubular, four-cleft, and of fleshy texture, which enables them to continue for some time in perfection. Its style of growth is not elegant, as it is inclined to be leggy, but as it flowers very freely in a small state, this fault can at once be remedied. In the same house a very beautiful member of the Spider-weed family is in flower, viz., *Tradescantia fuscata*, a plant of dwarf habit with oval leaves covered with silky hairs. Its flowers, which are borne on very short stalks, are as large as a florin, and of a rich purple hue. For ornamenting the roof of a stove few climbers are more valuable than the old *Jasminum Sambac*, on account of its free-flowering property, and the delicious perfume of its double, bluish-tinted blossoms, which are very useful for cutting purposes. *Æschynanthus pulcher* makes a pretty basket plant; its elegant scarlet blossoms, which are produced plentifully and continuously, are highly attractive, and they hang in graceful profusion. The flowers of the Imperial *Napoleona* (*N. imperialis*) ranks, perhaps, amongst the most strikingly curious of cultivated tropical shrubs. In form they much resemble the singular zoophytes known as Sea Anemones. They are circular in outline, 2½ in. across, with the outer brownish-red portion membranous and spreading, and the inner part fringed and incurved and almost enclosing the bright orange centre. They are produced plentifully on the tall-growing shrubs, the deep green foliage of which forms a striking contrast to the quaint-looking blossoms. It is a native of the African jungles, and in cultivation needs an extremely moist heat to bring it to a flowering condition. W.

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THE CHEMISTRY OF COMMON LIFE.*

BOTH professional and amateur horticulturists will find much to instruct and entertain them in Mr. Church's new edition of the late Professor Johnston's well-known work. The second edition, published a short time after Prof. Johnston's death under the editorship of the late Mr. G. H. Lewes, has long been out of print, and it seems strange that such a length of time should have been allowed to elapse before the publication of a fresh edition of one of the most popular of scientific books. Like Faraday, Liebig, Tyndall, Huxley, and a few others, Professor Johnston had the somewhat rare gift of conveying scientific truths to readers of the meanest capacity without in any way veiling or transforming them, and the present editor has done wisely in interfering with the original text and general arrangement of the matter as little as may be. Mr. Church has had the advantage of being able to refer to Professor Johnston's private and corrected copy of the first edition of "The Chemistry of Common Life," so that he has been able not only to incorporate in the present work some really valuable matter from the late author's own pen, but he has been able to learn the kind of additions which he contemplated, advantages which were not enjoyed by the editor of the second edition. Only such corrections and omissions have been made as the progress of science seemed to demand, and the addition of an all too short chapter on the "Colours we Admire" is one which Professor Johnston, had he lived a few years longer, must necessarily have added to the work as an appropriate pendant to the chapter on the "Odours we Enjoy." In this chapter Mr. Church tells us how the chemist can now build up in the laboratory from such an unpromising material as gas tar a colouring principle of great beauty known as alizarin, and, hitherto, only found in the root of the Madder plant (*Rubia tinctorum*). The material from which artificial alizarin may be formed being cheap, the manufactured product has displaced the preparations of Madder root to a great extent, so that the imports of that once valuable plant have greatly fallen off. Since this grand discovery of the means of imitating Nature's own handiwork, chemists can now imitate the processes going on in the Indigo plant, and indigo dye may be formed in the laboratory with as much certainty as alizarin, although the process is, as yet, too costly and elaborate to be commercially available. Every year, however, sees new discoveries in the direction of manufacturing natural bodies hitherto only found in plants, and we

* "The Chemistry of Common Life." By the late Professor JAMES F. W. JOHNSTON. 2nd edition revised and brought down to the present time by ARTHUR H. CHURCH, M.A., &c. W. Blackwood & Sons, Edinburgh and London. 1879.

must not be surprised if some day we hear of a cheap method of building up ordinary sugar in the same way as we now build up alizarin and indigo. We also have an interesting account of colein, a colouring matter discovered by Mr. Church himself in the leaves of the *Coleus Verschaffeltii*, which seems to be closely akin to, if not identical with, the colouring matter of Red Cabbage, red wine, most red, blue, and purple flowers and fruits, as well as with the red pigment of the Copper Beech. Colein is a red, resinous-looking substance, which will not dissolve in ether and only slightly in water, but is very soluble in spirits of wine. With a drop of ammonia solution colein turns purple, violet, indigo, green, and yellow, while with a drop of acid it takes a scarlet hue. Can it be, one may ask, that the ever varying hues of flowers are due to the different degrees of the alkalinity or acidity of the juices contained in their petals? It is to be hoped that Mr. Church will pursue his researches in this direction. In a leaf of a *Coleus*, say *Coleus Verschaffeltii*, the colouring matter is very irregularly distributed in the cells of the epidermis, some of them containing much, some a trace, and others none at all. The hairs of the stem and leaf of this plant form most interesting microscopic objects; one hair, for instance, say of six cells, may have the end cells richly tinted, while the rest are quite colourless, or the exact reverse may be the case. The leaves of variegated plants afford a vast field of research, both to the botanist, chemist, and microscopist.

As for the ordinary leaf-green, or chlorophyll, as it is called, Mr. Church frankly allows that, although it exists in thousands of tons all around us, chemists have not yet ascertained its component elements, much less their relative proportions. They are uncertain whether it contains nitrogen or iron, or whether it consists of one or more colouring matters. In this respect chemists appear to resemble certain horticulturists, who, instead of trying to improve old and valued subjects, use all their endeavours to produce novelties, whose worth is, to say the least, problematical. The other chapters which will interest our readers are the following: "The Soil we Cultivate," which not only treats of the different kinds of soil, but of their varying constituents and their influence on the growth of different species of plants; "The Plants we Rear," the title of which sufficiently explains its contents; "The Bread we Eat," which fully describes Wheat and its substitutes, such as Rye, Oats, Indian Corn, Buckwheat, Rice, the Potato, the Plantain, the Sago Palm, &c.; the three chapters on "The Beverages we Use," including not only Tea, Coffee, and Cocoa, but their thousand-and-one substitutes; "The Sweets in Extract" from the Cane, Beetroot, Date, Palm, Maple, Sorghum, and other sugar-yielding plants; "The Liquors we Ferment" are so numerous, that their description occupies three whole chapters; while bread and bread-stuffs only take up a single one. It is another lamentable sign of human weakness that "The Narcotics we Indulge" take up no fewer than eight chapters, or nearly a quarter of the whole book. These are valuable from a philosophical point of view, as showing that the lowest tribes of savages are just as prone to seek for temporary comfort in the use of narcotics as the most highly-cultivated European. It would take up too much space to give even a list of the whole of the narcotics described in the present edition of Professor Johnston's work, but a few of them may be selected from localities which are sufficiently far apart to show the prevalence of this form of indulgence. India has its Opium, Hashish and Betel; Polynesia its daily Ava; Peru its Coca; the Florida Indians their emetic Holly; the Tartars of the Himalayas their Thorn Apple; the Englishman and German their Hops, and we may say all the world its Tobacco. "The Odours we Enjoy," and, as we have said before, "The Colours we Admire," may be read with profit and with pleasure by all.

A full index will help the reader to a knowledge of the special subjects of which the book treats.

CHARLES W. QUIN.

HOVEY'S FRUITS OF AMERICA.

MR. HOVEY has sent us some numbers of this really noble work, which was begun with the idea of figuring in colours all the fruits of that country, whether of native or foreign origin. The plates are well drawn and coloured, and the descriptions full and accurate; in fact, we very much want in England a book on fruits equally satisfactory in respect to full and exhaustive descriptions, such as those of Mr. Hovey and M. Leroy. This book was, unfortunately, not completed, owing to the great war in America, when the price of paper suddenly increased to such a degree that the price of the paper alone amounted to more than the announced price of the book. It had, therefore, to be discontinued, but not before a good deal of useful work was done. We quote the following account of the Dix Pear:—

Few, if any, of our native Pears hold a higher rank than the Dix. The large size, beautiful appearance, and exquisite flavour of its

fruit, added to the vigour and hardness of the tree, its productiveness, constant bearing, and period of maturity, give it a combination of qualities which but few varieties possess. When originally brought into notice, in 1829, it was pronounced "one of the very best autumn Pears, which might, with the greatest safety, be introduced into our gardens;" and twenty years' experience have fully confirmed the correctness of that opinion.

The Dix originated in Boston, in the garden of Madame Dix, in compliment to whom it was named, about thirty-five years ago. The tree sprang from seed near the house, and grew so rapidly, that in 1829 it had attained the height of 23 ft., with a stem 10 in. in diameter; it still stands in the same spot, and has now become a very large tree. It first began to bear in 1825, but did not produce a full crop till 1829, since which time it has continued to bear abundant crops of fine fruit.

The Dix is very late in coming into bearing, and, on this account, cultivators have often rejected it in making a selection of fine Pears. The average period of its fruiting is eight or ten years, occasionally in four or five, but oftener twelve and upwards. It has, however, the good quality of constant bearing after it has attained a fruiting state, and the Pears ripen off as freely as the Baldwin Apple. It does not succeed upon the Quince unless double-worked.

The Dix is one of the most marked varieties in the nursery. The wood is almost as yellow, smooth, and slender as a Willow; but the tree has an erect and upright habit, and in time forms a large and fine head.

TREE.—Vigorous, upright, with rather long and slender annual shoots, occasionally thorny, horizontal at first, but erect at the ends; as the branches become older they assume a rather straggling habit.

WOOD.—Clear light yellow, smooth and glossy, with very minute dots, slender and rather long-jointed; old wood, pale olive-yellow; buds, medium size, roundish-ovate, slightly diverging, with very prominent shoulders; flower-buds, medium size.

LEAVES.—Small, ovate, light green, broadest in the middle, tapering to each end, little recurved on the midrib, slightly wavy, and somewhat reflexed at the edges, with a smooth and glossy surface, and very finely serrated; petioles long, about 2 in. in length, slender.

FLOWERS.—Medium size, petals narrow.

FRUIT.—Large, about 4 in. long and 3½ in. in diameter; form, oblong, inclining to pyramidal, regular, largest in the middle, tapering to an obtuse point at the stem; skin, slightly rough, greenish-yellow, becoming pale yellow when mature, broadly tinged with pale red in the sun, and mottled with dots of a deeper shade, often russeted around the crown, and regularly and thickly covered with large, distinct russet specks; stem, medium length, about 1 in. long, rather stout, curved, and inserted in a shallow cavity, formed by swellings and projections of the fruit, highest on one side; eye, medium size, open, and slightly sunk in a very shallow, plaited, or furrowed basin; segments of the calyx short, stiff, projecting; flesh, yellowish-white, coarse, melting, and juicy; flavour, rich, sugary, slightly vinous, perfumed, and delicious; core, rather large; seeds, small. Ripe in November, and keeps four or five weeks.

Provincial Spring Flower Shows.—I am glad that double Primroses have found so many friends to help their cause. If only our provincial horticultural societies could be prevailed on to hold exhibitions of spring flowers (as is done in London) in April or in the early part of May, emulation would be excited among growers of hardy early blooming plants, and many a flower would thus be brought into notice which at present is born to blush unseen. A corn-hall, assembly-room, a drill-hall or disused rink, would each make a good exhibition room, and I think, in a pecuniary point of view, we would find such a flower show to answer. Out-of-door exhibitions, even in July and September, are often spoiled by bad weather; but there would be no risk of such misfortune to a show held under cover, and to which so many persons would eagerly flock, anxious to obtain a glimpse of early floral beauty. Moreover, an exhibition of hardy flowers would open a wider field for competition among a large class of cultivators, who are debarred by circumstances from contesting for prizes offered for specimen plants and stove exotics, the culture of which demand artificial heat, space, and labour. But Auriculas, Alpines, Primroses, Polyanthus, Hyacinths, Dutch Tulips, Squills, Daffodils, Cyclamens, Anemones, &c., are readily grown, while it would be easy for those who have forcing-houses to add their quota, so as to make our country spring shows a success to the promoters and a delight to the beholders. Will not more than one provincial horticultural society take this matter in hand, and announce a show of this description for May 1, 1880?—C. R.

PLATE CLXXXVIII.

HARDY ANNUAL HAIRBELLS.

(WITH A COLOURED FIGURE OF *CAMPANULA MACROSTYLA*.)

WITH but few exceptions the whole of the numerous family of Hairbells are very handsome, and those of annual duration comprise some of the most showy. To this group belongs the subject of the accompanying illustration, the recent introduction of which to our list of beautiful hardy annuals must be regarded as a decided acquisition. It is rather dwarf in growth, seldom exceeding 1 ft. high, and a good idea of its singular habit may be gleaned from the subjoined woodcut, from which it will be seen that the numerous branches which are but sparsely clothed with foliage, are arranged in a candelabra-like manner, and which in addition to the large size and pleasing colour of the blossoms, with the beautiful net-like veins of a deeper shade, render it highly attractive. Its specific name *macrostyla*, or large style, is given on account of an unusually excessive development of that organ, which is club-shaped, and rises erect from the centre of the blossom. It is found growing in sandy soil in the vicinity of Lake Isauria, near Mount Taurus, in Asia Minor, whence it was first introduced a year or two ago.

A rich light soil in an exposed and sunny position seems to meet its requirements. It may be sown in the open border, either during the spring months or in September, to stand the winter so as to obtain flowers early in the season.

*Campanula macrostyla*.

Besides this handsome novelty there are several other species of the annual class that are very desirable, and which have long been esteemed as good old-fashioned border flowers. The best of these are—

Lorey's Hairbell (*Campanula Loreyi*).—An old introduction from Mount Baldi, in North Italy. It grows 9 in. to 1 ft. high, has numerous branches and small, stalkless, shining leaves. Its blossoms are of a blue-violet colour, and are produced in sufficient quantity to render it a pretty border annual; it is seen to the best advantage when planted in masses. Its variety called *alba*, with blossoms of silvery-grey, is also very attractive.

Loeffling's Hairbell (*C. Loefflingi*).—This is a showy species, dwarf in habit, rarely exceeding 4 in. high, and it produces a profusion of violet-blue blossoms $\frac{1}{2}$ in. across. It is a capital plant for the summer decoration of rockwork, or for front spaces in ordinary borders. It is found growing naturally in the cornfields throughout Portugal and Spain.

C. atica.—This is another miniature species, about 3 in. high, with reddish-purple flowers, which are produced abundantly throughout the summer. Its white variety is very pretty, and when intermixed with the original kind is strikingly effective.

The Strigose Hairbell (*C. strigosa*) is a native of Aleppo and other parts of Syria, whence it was introduced a few years since. It grows about 4 in. high, is a profuse flowerer, and lasts long without any abatement in beauty. Its blossoms are 1 in. across, of a dark blue colour, the rather long tube being of a pale yellow shade.

Venus' Looking-glass (*Specularia Speculum*).—Though this fine old annual cannot be strictly classed with the *Campanulas*, it is so often ranked with them that an allusion to it under this head is, on this account, admissible. It is, without doubt, one of our showiest annuals, and besides the large-flowered form called *grandiflora*, both in purple and white, we have the double-flowered kind, which is said to come true from seed, and a procumbent variety dwarf and compact in habit, and bearing violet-blue flowers.

S. pentagonia.—This is another well-known favourite with larger flowers than the last, but less profusely produced. Its colour is purple, with the centre of a deep blue shade. This and the foregoing are particularly desirable, for, in addition to their showiness, they invariably scatter their own seeds, which come up after year and give no further trouble; therefore they are as useful as the perennial kinds. W. G.

EFFECT OF LOCAL INFLUENCES ON GARDEN CULTURE.

I HAVE a large garden, ten miles distant from any town, furnished with the usual appliances for the cultivation of both hardy and tender plants; I have an extensive knowledge, both practical and theoretical, of their culture—in fact, with my horticultural friends, I am accepted as the local authority on the subject; yet here, even with extra care, the commonest plants, such as *Fuchsias*, *Pelargoniums*, *Chrysanthemums*, &c., cannot be induced to make a moderately healthy growth. These easily grown plants better illustrate the difficulty to which I wish to direct attention; but my remarks apply equally to stove plants, Orchids, and others requiring more special treatment. The cause of the mischief affects almost all classes of plants which I attempt to grow. My garden is unfavourably situated on a clay subsoil, but this can scarcely influence to an extent so injurious plants grown under glass in soil suitable to them, more especially as the evil of which I complain is increasing. I could, a few years ago, obtain fair results from the cultivation of many plants which now refuse to grow. I have changed my head gardener five times in seven years, hoping to find one who could master the difficulty; I have been men of experience, who had been successful growers, and who would probably again succeed elsewhere. Here all failed alike, and admitted their failure. My present gardener, formerly plant grower for three years in a large provincial nursery, admits the facts as I state them, but is utterly at a loss for an explanation. As may be expected with unhealthy plants, insects thrive—the mealy bug especially delights in the place. It does not confine itself to the stoves, but revels equally in the cooler houses, and even on plants in the open ground. But insects are not the cause of the mischief, or at any rate any insect known to me and visible, for ordinary measures are taken for their repression, and I can measure the damage done by them. I have suspected the water, but the plants seem to behave the same, whether watered from the covered tanks in which the rain is collected or from a well. I have often heard of isolated cases of failure, such as a good gardener at a former place, celebrated for exceptionally fine specimens of *Adiantum Farleyense*, being unable at his next place, although circumstances and appliances were apparently equally favourable, to induce it to grow; but I have heard of no case similar to my own, where the difficulty affects many plants of the easiest cultivation.

The question which I wish to submit for solution is: Has anyone noticed a local condition, irrespective of the ordinary influences affecting the health of plants, which prevents the development of growth usually following on proper cultivation? Strange and exceptional as is my failure, it cannot be unique. The same causes, whatever they may be, must have produced similar effects elsewhere; I therefore write in the hope that some one of your readers, recognising a former difficulty of his own, and more fortunate than I in discovering the cause and remedy, may, in kindly sympathy with a fellow-horticulturist, publish his experience for the public benefit.

Warwickshire.

E. T.

Hardy Border Plants.—It may be well to remind all who love to see their garden borders gay with flowers that just now is a good and proper time to sow in the open ground seeds of Wallflowers, Stocks, Canterbury Bells, Pentstemons, Antirrhinums, Pansies, Polyanthuses, and many other favourite hardy flowers. The place selected for sowing should be a warm one, exposed to the full light of the sun, as it is desirable that both seed and soil should have all the benefit of solar heat should the weather prove dull and cold, as it does sometimes in May. During hot bright days it is easy to give a little shading whilst the sun is high, but warmth is entirely essential to the free germination of the seed. Pentstemons and Canterbury Bells would germinate quickest under glass.—A. D.

GARDENING FOR THE WEEK.

Flower Garden.

Auriculas.—A midland county Auricula grower writes for information respecting the construction of garden frames for these flowers, and his letter would lead one to infer that there is an impression abroad that frames and houses of a peculiar construction are necessary for Auriculas. If that be so, the impression is an erroneous one. Our frames at Loxford are simply ordinary Cucumber frames, and no system of side ventilation is provided. In summer the frames are elevated on bricks placed at each corner. Whenever the weather is fine, we pull the lights quite off, and do not trouble about the cold; Auriculas may suffer from heat in summer, but never from cold. Another correspondent lost his collection last winter from frost, so he says; but that cannot be the case, as extraordinary circumstances no Auricula suffers from frost even during the severest winter. They may be killed by kindness, or they may be starved by neglect, but the weather must not be blamed. Whenever an unsuccessful grower is met, there is the usual remark about the "horrible weather," which never suits such people. It will be time next week to begin potting. If the soil be not prepared, see to that matter at once, and get the pots in readiness.

Carnations and Picotees.—At this date last year we had begun to place sticks to the flower-stems, and a few of the earliest had been disbudded; but, unless there is a considerable change in the weather, they will not be so far advanced for at least a fortnight yet. Those who can keep their plants in cold frames will certainly have a considerable advantage this season over those who have no such means of protection. With the most careful searching of the soil, it is not possible to remove all the wireworms, and we have lost a considerable number of our best plants through that pest, and we must expect to lose a few yet. Whenever a plant shows signs of flagging, examine the underground round the stem, when the wireworm will be found; but probably by that time the mischief will be done.

Dahlias.—There is little to add to what has been already stated in previous numbers respecting these plants. See that they are secure from frost, that they are not overcrowded in the frames or pits, and be sure they have abundance of ventilation, removing the lights entirely whenever the weather permits. The foundation of future success lies in a stocky, firm growth and rigid, deep green leaves at the present time. When plants are received from the nursery in 2½-in. pots shift them at once into 3-in. pots into good rich mould and place them in a warm house near the glass for a few days in order to encourage root action.

Phloxes, Pyrethrums, Pentstemons, &c., in Pots.—These hardy border plants may be classed together for convenience sake. Their culture is much the same; they require good rich loam and 8-in. or 9-in. pots, well drained, for plants with four or five stems. The flowering-stems are now well advanced and the pots are filled with roots; if there is any lack of vigour give manure water weak at every alternate watering. Support the stems with suitable sticks. This class of plants require a considerable supply of water at the roots, and they suffer if that be neglected even for a day; they show signs of distress by the oldest leaves becoming yellow and the stems hard and wiry. They should all be out-of-doors now, sheltered if possible from the north-west winds.

Polyanthuses.—These are much more lasting than Auriculas; the centre truss comes up first, and small trusses are produced for a few weeks afterwards, therefore the same plant will remain in flower, if kept in a cool place and shaded from the sun, for at least six weeks. The leaves under glass have a tendency to become drawn; it is therefore better to remove the lights altogether in fine weather and admit air at night. Water freely and remove all decaying blooms; as they go out of flower place the plants on a cool bottom out-of-doors for a time.—J. DOUGLAS.

Orchids.

Beetles and Ants.—Most Orchids requiring a high temperature will now be in an active state; the greater portion, such as the majority of Vandas, Aerides, and Saccolabiums, that flower in spring and early summer, will be fast pushing up their bloom spikes, and those who have to contend with the destructive beetles will need to be continually on the look-out to protect the advancing flowers from their depredations. The usual plan is to put a piece of cotton-wool round the flower-stem, but I have found ordinary wool for this purpose better, inasmuch as when it gets wet through syringing, the moisture makes little difference to it; not so with cotton, which, when much saturated with water, gets into a close compact mass, and does not offer such an effectual barrier to the approach of the beetles. Where these are present, as they almost invariably are

where any considerable number of plants are grown, it is much better to keep on continuously trapping them than to allow them to rest for awhile until they have become numerous, and then to be under the necessity of making extra efforts to reduce them. Independent of the annoyance resulting from the loss of flowers which they destroy, when allowed to get numerous they do immense injury to the plants, especially the thick-rooted species, by eating the tender points of the roots. I have seen collections so seriously attacked in this way, that were it not for the recuperative powers which these plants possess they would have been destroyed outright, and as it was, both their growing and flowering capabilities were very much reduced. I have tried all or almost all the different poison preparations made for their destruction, all of which kill more or less of them, but amongst those whose destructive power is derived from phosphorus, I have found none equal to Roth and Ringeson's beetle poison; like others, however, it very soon dries up, in which condition it is useless. With the help of this laid down for a couple of nights at a time, at intervals of a month, and small marmalade pots half filled with olive oil or treacle, and placed so as to touch the pots of the plants in which the insects lodge, or anywhere near where they hide, they may always be kept so few in number as to do little harm. Where ants exist to an extent to be troublesome, the oil or treacle will be sufficient to keep them down. In their case it is better to use both alternately, as, from their keen instinct, if the oil be always present they soon learn to avoid it.

Shading.—So far, I scarcely remember a season when we have had so little sunshine; the effect of this will be that when it comes continuous and powerful, the plants will be less able to bear it, and, where fixed shadings were put on as early as it became necessary to use any at all, the weakening influence in the case of such a spring as this will be much worse than usual. One of the most successful growers of Orchids, especially of East Indian ones, with whom I recently conversed, informed me that he had become so convinced of the evils attending too heavy shading, even when moveable, that for the last two seasons he had used it very much thinner than for thirty years he had ever previously done, with the obvious result of shorter, stouter foliage, particularly in the case of such plants as Vandas, Aerides, and Saccolabiums, and with a proportionate increase not only in the number of spikes produced by each growth, but also in the quantity of flowers which they bore. The plants furnished good evidence that rude health and a disposition to flower are both the result of an increased amount of light, which ripens and solidifies the growth during the process of formation.

Ventilation, &c.—The cold, cutting east winds that have continued so long have made the admission of air a difficult matter, yet every day, if even for a few hours, enough should be given to dry up the atmosphere of the house, by which means more moisture may with safety be indulged in for some hours after closing. Avoid high night temperatures, as they are most baneful in their effects. It seems singular, but I have long noticed that Orchids which inhabit even the hottest countries will not long keep in good health if submitted to so high a night temperature as that in which hard-wooded species of plants that come from the same countries will thrive. Difference of opinion exists amongst Orchid growers as to syringing overhead during the growing season, some practising it regularly and others little or not at all. Its effects a good deal depend upon the light or dark character of the house in which the plants are grown, their proximity to the glass, the volume of light during the time the sun is on the glass that is allowed to reach them, and also the more or less air and atmospheric moisture that is applied. My own impression is that, with the exception of a very few species, if the plants have not stamina enough in them to bear syringing overhead without injury, the general conditions of cultivation under which they are grown are such as not to be compatible with a healthy existence for any considerable length of time.

Vanda teres.—This most distinct and beautiful species, the individual flowers of which are equalled by very few, requires special treatment in order to bloom it regularly every year. It is indigenous to different parts of the East, and, to some extent, no doubt this will have an influence upon its disposition to produce flowers in the case of individual plants; but, by growing it in the lightest position in the house, with the top not more than 6 in. or 1 ft. away from the roof glass, and by withholding water altogether from the middle or end of November through the winter, during which time a temperature of 55° will be enough, it may be induced to flower; with more than this temperature, unless there is very little atmospheric moisture, it never gets quite at rest, a condition indispensable to its blooming. If, about the middle of March, the plants be put amongst the warmest section, but no water applied until the flower-buds have broken from the stem, I have found it to bloom as freely as any other species; after this water may be given, but, if applied earlier, with me, at least, the plants always went off into growth.—T. BAINES.

Ferns.

In planting a house with Ferns, care is required to arrange them in such a way that the stronger growers will not encroach upon and destroy the weaker ones, and attention in after years will also be necessary to keep the large ones within bounds. This will be easily effected by cutting away the oldest fronds to a greater or less extent, an operation which has the direct effect of reducing the strength and size of those produced immediately afterwards. This not only applies to the lower-growing kinds with creeping rhizomes, but also to the tree species; consequently, by a judicious removal of a sufficient number of the old fronds whilst there is yet vitality in them, the extension of those forthcoming can be regulated to a nicety; but it may be necessary to inform the inexperienced that this frond-cutting must not be carried too far, or much injury will be the result, as, if many of the evergreen species with a creeping habit of growth have the whole or the greater portions of their fronds removed at once, many of the rhizomes will die; as a rule, the stronger habited the plant the more cutting it will bear. Complete removal of the old fronds, if they happen to get into bad condition through being infested with scale, such as is sometimes practised on the hardier kinds of *Adiantum*, should never occur in the case of any less able to withstand mutilation. I have frequently seen plants more or less strong of *Gleichenia*, summarily treated in this way, either wholly or partly die. A very much better plan with any, but especially with valuable plants of this description, is to kill the scale by thoroughly syringing the whole head right down to the surface of the soil with a strong solution of insecticide; even if to effect the certain destruction of the insects the application be given so strong as to more or less disfigure the foliage, it will be very much less injurious to the plant ultimately than removing all the fronds at once.

Propagation of *Gleichenias*.—These are not nearly so plentiful as they deserve to be, taking into consideration their beauty and usefulness. They need comparatively very little artificial warmth to grow them well, and they do immeasurably better in a dry position, such as that immediately over exposed hot-water pipes, or a flue, than elsewhere, conditions that would at once stop the healthy development of most Ferns. One reason why *Gleichenias* remain scarce is, that they cannot be propagated by division nearly so readily as most other Ferns, for their rhizomes will not bear dividing into small pieces like the generality of Ferns; but where healthy, vigorous specimens exist, they push their creeping roots rapidly at this time of the year over the sides of the pots or tubs which they occupy, and, if as they extend they are layered into small pots, drained and filled with peaty soil, and fixed in a continuous row round the large pots in which the plants are growing, and secured, as they easily can be, by a few strands of wire, a large quantity of young plants can be thus obtained, but the operation requires care in carrying out, as these young extending rhizomes are so soft, delicate, and susceptible of injury as the growing extremities of an Orchid root; and if, on the other hand, the layering be not effected until the rhizomes have extended a considerable way over the sides of the pots, and have got into a hard, stunted condition, they are little disposed to grow freely after they are layered; consequently it is best to prepare a sufficient number of little pots for layering, and fix them in position just as the creeping roots are about to extend beyond the rim of the pot in which the plant being propagated from is growing. With a good vigorous specimen, these push so fast at this season that in a few weeks they get sufficiently advanced to layer, and also form roots in proportionately little time, but in directing and securing these young root-growths to the small pots in which they are to be layered, very great care must be taken not to injure them. I have found bits of lead sufficiently heavy to hold them in contact with the soil less injurious than the hooked sticks or similar appliances generally employed for that purpose.—T. BAINES.

Indoor Fruit Department.

Vines.—Too much stress cannot be laid on the importance of starting late Vines sufficiently early for the crops to be perfectly ripe before the end of September, when they may be kept sound with little or no trouble. Ours were thoroughly matured by the beginning of September, and we have yet a goodly number of bunches as plump and fresh as when they were cut at Christmas time, and not a bad berry has had to be cut out of them, a circumstance wholly attributable to early maturity. All late Vines should therefore now be ready to disbud, and be grown on freely by taking advantage of sunny days, to close up early, running up the temperature to 90°, or even more, along with abundance of air-moisture. Inside borders are preferable for late as well as for early Grapes, and though they cause additional labour as regards watering, the advantages gained by the power to feed at will, and by being independent of the weather, more than balance accounts for extra labour. See that all inside borders are well moistened through

before the Vines flower; outside borders will, of the two, rather require to be protected from water than be given any. Of sunshine we have still but little; early Grapes, therefore, make but slow progress, and, unfortunately, many are expected to have them ripe by a certain day. Where such is the case they must continue to force at all cost, but the warning must be given that the strain will probably be too much for the Vines, and though they may finish up fairly well this season, next year the injury will become apparent. It is always better to wait an extra week or two for ripe fruit than to permanently injure the Vines by excessive forcing. Where Grapes are colouring, ventilate freely night and day. There should now at all times be a slight current of rarified air in the house, and the temperature should be maintained at a minimum of 60° degrees on the coldest nights. Atmospheric moisture must still be maintained, but only in moderation, and on warm days give air rather freely, in order to allow the stagnant moisture to pass off, otherwise mildew might be engendered. Tie down and stop the shoots in successional houses, and do not be afraid of leaving too many growths or too long shoots, provided there is space for full development without overcrowding. In thinning out the berries, keep in mind the variety being operated on, and thin little or much accordingly, erring rather than otherwise on the side of overthinning, when the Grapes are intended for long keeping. Pot Vines that are intended for fruiting next season should be potted on as soon as the roots have reached the sides of the pots, for if once they get entangled together before a shift is given, they sustain a severe check by the operation; grow them on without bottom heat as near the glass as possible, and with abundance of atmospheric moisture. Stop the main shoots as soon as they have become 6ft. in length, and the lateral shoots at the second leaf.

Peaches and Nectarines.—Routine work amongst these will now consist in keeping the strong growths pinched and the whole neatly tied in, avoiding overcrowding. Expose as much as possible the whole of the fruit to full daylight; this is necessary, both as regards free swelling and high colour. Give abundance of tepid liquid manure as soon as the second swelling of the fruit is perceptible; in well-drained borders it is hardly possible to give too much. Well syringe the trees night and morning, and maintain a moist, ammonia-charged atmosphere by sprinkling manure water on the floors and walls till the fruit begins to colour, when it should be discontinued. Late houses should now be finally disbudded, well syringed, and abundantly supplied with water. Give no quarter to green or black fly, but fumigate immediately any are perceived.

Strawberries.—Attention as to abundant supplies of water, ventilation, and thinning out of surplus fruit is about all these now need; taking it for granted that there are good plants upon which to operate, abundance of good fruit must be the result. The later plants are throwing up their flower-stems, and should therefore not be retarded, but be encouraged to make sturdy growth, by giving them plenty of room and turning their crowns sunwards. A cold pit on which the lights could be put at night is a suitable position till they are required for introduction to the forcing pit. Plants from which the fruit has been gathered should be gradually hardened off preparatory to forming new plantations, which can now be made off at any time. Any fruit requiring to be retarded may, if removed to a cool fruit room before it is dead ripe, be kept for a week or ten days.—W. W.

Kitchen Garden.

We have now had about seven months of wintry weather, in the shape of a succession of snow, hail, and rain storms, varied occasionally by biting north and north-east winds, which we bore meekly, inasmuch as they dried the ground and allowed seed to be sown; but, judging by present appearances of many of the seedlings, even this work would have been best left alone, for to say that they look sickly is to very inaptly describe their condition; and, however mild the weather may now become, many vegetables will be very late, and will need all the cultural aid that can be given them if they are to attain anything like perfection this season. It is by paying strict attention to the smallest details that success is to be attained; therefore, beginning with the seedlings, these should always be thinned before there is the slightest danger of disturbing the roots of those that are to remain. Many crops are irretrievably injured by neglect in regard to thinning them at the proper time. Onions, Carrots, Parsnips, Turnips, and kindred subjects, should all be thinned out as soon as they are large enough to handle, and afterwards the ground between the rows should be deeply stirred. The main crops of Beetroot, Broccoli, and Kale should now be sown. Broccoli requires light, deep soil, free from rank manure, its best fertiliser being soot or a surface-dressing of guano as soon as the seed is sown. For heavy, tenacious soils, burnt earth, charcoal, and wood ashes are preferable. French and Runner Beans may now be sown in quantity. Amongst the different sorts the best for a main crop is

the Canadian Wonder; if sown thinly in rows, 30 in. apart, it will require small Birch twigs to support it, as, under good culture, it is a prodigious cropper. As a Runner Bean none equals Sutton's Giant White, a kind a long way in advance of the ordinary Scarlet Runner, as it bears to the very bottom of the haulm, and continues bearing throughout the season, if well mulched or watered in dry weather. Cauliflower plants that were wintered in handlights are growing well in spite of the weather; these require high feeding, and, should the weather turn out to be dry, a dose of liquid manure will be of great assistance to them. Plant out successional batches, and also spring-sown Cabbages and Coleworts, which will come in for early autumn use. Brussels Sprouts are a most important crop, for amongst all the winter greens these have proved this winter to be about the hardest. The main crop should now be planted; 3 ft. row from row, and 2 ft. plant from plant is none too much. Thin out the seedlings of any that were sown in rows for a permanency. After several years trial we can pronounce this to be the best system of culture, its only drawback being that ground cannot at all times be spared to thus sow them. Main crop Peas must now be sown in quantity, in doing which it is well to forestall the weather, and sow them in trenches, in order that in the event of drought supervening, they can be well watered, as these, like Cauliflowers, are thirsty subjects, and resent dryness, by the production of mildew, instead of Peas. Earth up and stake advancing crops, and if an extra early dish be desired, pinch out the tops; the lateral growths will soon show blossom, but, of course, this is at the sacrifice of produce. We cut the first Asparagus from the open ground on the 26th ult., three weeks later than usual, and Asparagus is by no means looking so kindly as it usually does the first week in April. This should now be looked over every morning in order that all heads may be cut before there is the least trace of the buds at the tips of the shoots opening. Now is the time to make new plantations, before doing which beginners would do well to examine the illustrations and instructions given in p. 344 of last week's GARDEN. Plots of ground that have been occupied with winter greens will now be becoming vacant, and should be dug or trenched according to the crop intended to be sown or planted on them. If for Celery, simply clear off the stumps and dig out and manure the trenches; and if time and labour be scarce, the same mode of culture will answer for Peas, but preference should be given to entire trenching, when time and labour admit of it. Forcing properly, so called, will now be at an end, and all salads and all vegetables in frames should now have full exposure, except on cold nights, and a constant succession of small salads must be kept up by frequent sowings in the open air. Tomatoes, Capsicums, Ridge Cucumbers, and Vegetable Marrows should be potted ere the roots get entangled together, and be grown on sturdily till the last week of this month, when they may be transplanted to their fruiting positions, either near south walls, on south borders, or in other sunny sheltered spots. Prick out Celery, Cauliflower, and herb seedlings, and grow them on with partial protection so long as cold winds and frosts continue.—W. W.

Parks and Open Spaces.

Freeing Roads and Walks from Weeds.—During May these will require particular attention in regard to weeding, the old method of hand-picking being yet the best. The objections to this system are the amount of time taken up in the work, the impossibility of pulling up the very small weeds which show themselves after the first shower, the loose surface left should there be many weeds, and that hand-weeding does not destroy any seeds which may exist in the gravel. Corrosive acids have been recommended for clearing weeds from walks, and also salt, but these, although effective, if used of sufficient strength and in sufficient quantity, can only be applied with great care, as any vegetation in the shape of edgings with which they may come in contact will be sure to suffer more or less. Acids are also destructive to watering-pots, clothes, &c., and they will be found expensive, whilst salt is unsightly, as, to be effective, it should lie on the surface for some time, its effect when used with water in a boiling state being less satisfactory than when used in a dry condition. It must also be remembered that whether acids or salt are used the weeds remain for some time in a withered condition on the surface. Generally when roads and walks are made with a view to utility, the work of weeding is trifling; but if broad roads and walks little used exist, they are certain to become extremely troublesome in this respect. Sulphuric acid (vitriol) is perhaps the most efficacious for the purpose of killing vegetation, and it should be diluted with 20, 30, or 40 times its volume, according to and in proportion to its concentration. Salt used in a dry state may be put on at the rate of from 2 lb. to 4 lb. per square yard with boiling water. It matters very little the quantity used, provided it be not less than that recommended in a dry state. The action of both acids and salt is not permanent, but may, if well done, last the summer and autumn. The best time for applying them is during dry weather, as weeds are

then in a state to take up the maximum of the poison applied. Hand picking should be done in moist weather, the weeds coming up better when the paths are in a soft state, and if well rolled, the effect is more easily obliterated. A combination of both methods may be tried with advantage. In dry weather roads and walks should be watered to prevent dust, especially in the vicinity of flower beds, and also in order that the stones may not become loosened in consequence of the grit, which assists in binding them together, being blown away, whilst on wet days rolling should by no means be neglected.—C. DENNIS, *Southwark Park*.

ROSES.

NEW ROSES, FRENCH AND ENGLISH.

THE article which I wrote for THE GARDEN on this subject has brought me into correspondence with one of the best known and most zealous of French horticulturists, who has taken exception to some of the views I have expressed, and has also given expression to some things with which, on my part, I cannot coincide. This, and the appearance of one or two articles in the "Journal des Roses," and the fact that two fine French Roses were admirably figured in THE GARDEN (p. 298), have induced me to follow up the subject, taking up the objections of my correspondent, and adding such facts as may be of interest on the subject, for we have abundant evidence that nothing connected with the queen of flowers is out of place or uninteresting.

I had animadverted on the very great number of worthless Roses which have been introduced annually for a number of years, puzzling our Rose growers, causing bitter disappointment, and worrying our amateurs as to whether they shall trust the glowing descriptions which our English nurserymen cannot endorse for lack of information. To this it is replied, that in the main it is true that far too many Roses are sent out, and that it would be a great deal better if they were curtailed; but it is also said that there is not the needed facility for bringing Roses under the cognizance of some competent tribunal, and that Rose growers at Lyons, or Brie-Comte-Robert, may each of them have what they believe to be good Roses, good enough to send into commerce, but that probably had they had the opportunity of seeing one another's flowers, they might have hesitated. I admit all this; I never imputed dishonesty but lack of judgment, and that blindness in the case of one's own progeny, which affects other things besides Roses. But besides this the retort is made, look at your Pelargoniums, Dahlias, &c., which every year are produced in large numbers, and yet the greater portion of them ought never to have been sent out, being no better than those which were already in existence. I think the hit comes rather home, but "two wrongs never yet made a right," and there is, moreover, this great difference between the two: if I buy in a set of Pelargoniums, they take little room; in a few months I can see all about them, and discard or keep as I please. But it is a very different thing with Roses. A nurseryman buys his lot in the autumn; he has to prepare his stocks in pots ready for grafting. These pots have to be kept in a hothouse, and take up a great deal of room, and require a good deal of fuel. The space will be regulated according to his trade, of course, but, under any circumstances, it is an expensive process. These plants cannot be expected to give any reliable blooms, and it is almost eighteen months before he can positively decide, and then, perhaps, a large number of those about which he has taken so much pains and gone to so much expense would be consigned to the rubbish-heap. This, I think, it is that most severely taxes the patience and temper of Rose growers in England. The descriptions given are unreliable in too many cases; even if he goes by the name of the raiser that will not always avail, for it is a strange fact that some of those who have given us our best Roses have also weighted their vessel with some utterly worthless varieties. One would hardly think that the raiser of Charles Lefebvre would recommend Madame Leonie Giesse; and if he, one of the most reliable of French raisers, could do so, we may surely expect that others may make similar mistakes. While on this portion of my subject, one is tempted to ask, What is the standard of perfection recognised by French growers? In the "Journal des Roses" for February there is a list given of a hundred Roses, which a commission, formed by the Horticultural Society of the "Haute Garonne," has selected from those grown in the south-west of France, and amongst them I find the names of some which have been either banished from our lists or never known here: Christian Puttier,* Docteur Hérón, Duchess of Sutherland, Duhamel Dumonceau,* Françoise Barillot,* Général Duc d'Aumale, Gloire de Ducher,* Hortense Mignard,* La Motte Sanguin, Madame Angèle Despott, Madame Clorinde Leblond,* Madame Hunnebell, Mademoiselle Eugénie Wilhème, Odeur Vital, Princesse Mathilde, and Triomphe de Toulouse; those marked having attained the highest

number of marks possible. Some of these I have never seen, and I very much question if they have ever been exhibited in England. In the same list, as well as in another in the April number on Lyons-raised Roses, I find Charles Lefebvre put down as having been sent out in 1871; this must be a mistake. I find it in Rose lists published in 1863, and, to the best of my belief, it was sent out in 1861.

But the chief cause of complaint, according to my correspondent, is that I have claimed credit for our English-raised Roses which is not due to them, for that it is a well-known fact that the greater portion of them are bought in France, rechristened, and sent out as English-raised Roses, and he gives me the following list, the first five of which he says are certainly French Roses, the others most likely so: Virgile, Firebrand, Duchess of Edinburgh, Edipe, Lord Beaconsfield, Princess Christian, Princess Beatrice, Star of Waltham, Reynolds Hole, and Sultan of Zanzibar.

Let me say in reply to this that there is evidently a mistake as to the two last on this list. I saw them in the seed-beds at Cheshunt, and know them to be English-raised Roses. Whatever may have been done in former years, it is tolerably clear that resource will not be had to this practice again to any extent; several hybridisers are at work. All know the parentage of the more recent English Roses, and can have no doubt as to what country claims the honour of introducing them, while those who do buy French Roses, such as Mr. Bennett, of Salisbury, openly proclaim their having done so. The practice of buying a foreign Rose and introducing it as if it were English is a very harmless proceeding,* and is only misleading in the event of prizes being offered for English-raised Roses, when, in some instances, it would be difficult to refuse a prize on this ground, sufficient evidence not being procurable on the point. It would be a very desirable matter to have a correct list of all really English-raised Roses, and as an instalment thereof I give the following:

Devonians, raised by Mr. Foster.

John Hopper, Mr. J. Berners, and Mrs. Ward, raised by Mr. Ward, of Ipswich.

Duke of Edinburgh, Beauty of Waltham, and Lord Clyde, raised by Messrs. Paul before the dissolution of partnership.

Princess Louise, Annie Laxton, Emily Laxton, Marchioness of Exeter, Mr. Laxton, and Charles Dawson, raised by Mr. Laxton, of Stamford.

Reynolds Hole, Cheshunt Hybrid, The Shah, W. Wilson Saunders, Sultan of Zanzibar, and Dr. Hooker, raised by Paul & Son, Cheshunt.

My correspondent doubts very much whether I am right in believing that English-raised Roses will be harder in constitution than French-raised kinds, and I think, perhaps, I was a little too decided in my opinion on this point, for, on thinking the matter over, I do most certainly call to mind instances to the contrary, and I remember one Rose of very great merit which obtained a first-class certificate, and was purchased for a considerable sum by one of our leading firms, but on growing and propagating it he found it so deficient in constitution that he threw it into the rubbish heap, while, on the other hand, some of the Lyons-raised Roses have a vigour of constitution one would hardly expect for the sunny south; it is then, I suppose, in this rather a matter of race than of birthplace, that seed saved from vigorous-growing Roses, whether at Lyons or Cheshunt, Brie or Slough, is likely to produce vigorous Roses. The question as to the origin of new Roses, is, perhaps, not so important now as it was a few years ago. English raisers are on their mettle, and, notwithstanding some drawbacks to their efforts, are not likely to allow themselves to be second in the race, and they must have seen that French raisers will not sell what they believe to be a really first-rate Rose; the *esprit de corps* is too strong for that, and they prefer having the honour of sending them out themselves. I do not think anything could have tempted the raisers of Charles Lefebvre, La France, Marie Baumann, or Marsechal Niel to have parted with them, and I find, as a matter of fact, that few of those Roses which have been bought in France and sent out in England hold a very high position in the estimation of rosarians. I am confirmed in this by an incident in my own experience.

Some years ago, it was reported that a Lyons raiser had succeeded in obtaining a yellow Perpetual Rose, and, as I was in France at the time, I was asked to go down to Lyons and try to procure it for a well-known caterer of novelties in horticulture. I went, but need not say it was an *ignis fatuus*; nothing of the kind was to be seen. In going through the Lyons Rose gardens, however, I chanced to see a new Rose of a very novel character, which I was desirous of obtaining for my friend. On my own responsibility, I offered what must have been a very tempting sum to anyone at all willing to do business for it. There was never for a

moment an atom of hesitation in the emphatic *non* with which my offer was met. "It is a grand acquisition, and I desire to have the honour of sending it out and having my name attached to it;" and so it was, and I believe, as long as Roses are cultivated, it will hold the place which I thought it merited.

There is still something to be done, and if only a raiser could get a yellow Charles Lefebvre, or a pure white Jules Margottin, what a fortune he would make! and why not? The strides which have been made should only lead us to look for further progress, and of this I am perfectly convinced that wherever any really good Rose is introduced no national jealousy, no insular pride will prevent the Rose growers of England from welcoming it and giving it all the honour due to it. In no country is there greater loyalty to the queen of flowers; but as our loyalty to our beloved Sovereign is naturally increased by the moral qualities of one who is a pattern to her subjects in all right ways, so our rosy royalty is naturally enhanced when we see it embodied in a flower of such surpassing excellence, as some of those which I have named.

DELTA.

NEGLECTED ROSES.

MANY a book has been written about Roses, and many more might and doubtless will, be published before Rose culture is half exhausted. To take the subject fairly from the commencement, let me begin by saying that of Roses we have no fewer than seventeen species indigenous to England. Exotic Roses, we read, were first planted here in 1622, and the Damask Rose was brought to us from Syria in 1573. Persia, China, the sunny vales of Southern Europe, and the rugged Alps have sent us specimens of this lovely flower. From the Isle of Bourbon and from America, too, Roses have made their way into our gardens and become in turn acclimatised, and later on parents of blossoms grander, larger, and more prized than themselves. But a word for the Brier and Dog Roses, sweet garlands of childhood! Who has not revelled in their odour and rejoiced in their delicate loveliness? These single native Roses are they which stamped, in 1377, the gold coin first struck by Edward III., and called the Rose noble; in architecture, they marked the Tudor epoch, and live yet in stone on many an arch as the Tudor Rose; it is the single Rose that blooms in heraldry the floral badge of England, and wreaths, with Shamrock and Thistle, the Royal Arms of the United Kingdom. The red and white Roses, innocent partizans of Lancaster and York, yet decorate many a cottage garden with rustic beauty; they have no place in Rose shows, indeed, but they are lovely notwithstanding; they last but a short summer's day, but they are sweeter scented than some of their finer relatives.

Modern history associates the Rose more particularly with three of the most unfortunate of queens, viz., Henrietta Maria of England, Marie Antoinette, and, lastly, the Empress Josephine, whose efforts in Rose culture have been perpetuated in the beautiful *Souvenir de la Malmaison* raised in Lyons, 1843. But every year produces some new claimants amongst the Rose family for horticultural honours, while every year also, at every Rose show, the judges must be puzzled to decide "which shall be fairest" where all are fair. Abler pens than mine have described the glories of Marsechal Niel, lingered on the perfections of Niphetos, dwelt on the charms of Madame Lacharme, and lovingly pictured the beauty of La France. Such Roses as these have many powerful friends; in truth to see them is to admire them, but those for whom I plead are lovely, too, a little old-fashioned, perhaps, but as we have gone back to coaches and mob caps, let us take one step back also to the flowers that charmed our forefathers.

First, then, where are the Pompon Roses, once, I am told, a feature at Rose shows? Where is that charming little Rose de Meaux (that surely was the Rose in the nursery tale, which fell from the mouth of the good girl who befriended the fairy)? and why is it never represented at exhibitions? Then as regards the lovely Scotch Roses, exquisite in perfume, very cups of attar, how rarely do we see them now, except, indeed, in old-fashioned gardens. The Austrian Brier is never mentioned among Roses, though it would be hard to find another of the same colour. As for the Macartney Rose (*Rosa bracteata*), it seems unknown, though in bud and blossom it is most handsome—worthy even a poet's praise or a painter's pencil. And, lastly, who now cultivates that loveliest of damask (?) Roses, the Rose Celeste, of the softest rosy-white, the colour so delicate, that it might form a fitting wreath for Aurora? This

Rose is fairest when 'tis budding new.

Its perfect beauty thrown into relief by the glaucous green of the calyx and foliage; expanded, it is true the flower is too single for a connoisseur to admire, but to those who raise new Roses from seed, the colour of this, combined with form and substance of some fuller variety, would prove a *ne plus ultra* of beauty. Will some knight of the Rose champion the cause of these neglected Roses?—blossoms

* My correspondent says, No; it is dishonest, as it would be if, as he says, I buy an English racehorse, run him in France, give him a French name, and say he is a French horse.

as fair as those which suggested the romance of the Rose, or inspired the poets of our own day with endless verses in their honour. But where can the pen stop which writes of this queenly flower?

C. R.

TREATMENT OF GRAFTED ROSES.

IN an article of mine which appeared in THE GARDEN about four months ago, entitled, "Conditions under which Grafting is Beneficial," I recorded some observations on the growth of different kinds of Roses on the Brier stock, stating, among other things, that in the case of weakly-growing Roses I did not think we utilised the stock to the best advantage by repressing its growth entirely, in the belief that by so doing we directed its energies into the Rose budded upon it, and I suggested that, in order to encourage weakly plants, it would be a good plan to encourage a partial growth of the stock as well—that, instead of rubbing off all suckers that push near the graft, they might be left and encouraged to some extent. When I wrote to this effect in December, I had no idea that my suggestions had already been put in practice, and with the very results predicted by me. According to the "Revue Horticole," M. Charbon has found that weak Roses budded upon strong stocks thrive best when the stock is permitted to make a certain amount of growth as well, and that when the shoots of the latter are rubbed off the graft loses its vitality to a great extent. M. Charbon thinks the growth of the stock promotes the vigour of the graft by drawing the sap up to it, that is, when the growth on the stock is above the graft. This may be, but, as I stated in THE GARDEN before, I think it will be found of no consequence whether the growth of the stock be permitted above or below the graft, so long as it is pretty near it, and it is usually easier to promote growths under the graft than above it. There is only one point in M. Charbon's theory on the subject which does not fit exactly. In one place he attributes the failure of weakly-growing Roses on strong stocks to an over supply or surfeit of sap; and in another place he attributes the vigour of the graft to the supply of sap pumped up by the growth of the stock, an apparent contradiction. The first supposition, I imagine, is wrong, and the last right. It has always appeared to me that a weak graft had not the power to pump up a sufficiency of sap for its own wants. Be this as it may, the question is an important one in relation to grafting generally, and I would be glad to hear the opinion of Rose growers and others on the subject.

In the case of Vines I have for a good many years acted on the idea here indicated, always either permitting a limb of the stock to grow also, or putting the graft on half-way up the rafter, thus giving the graft the benefit of the leafage of the stock to a large extent. I do not go so far as to say, as some have done, that a stock is ever wholly controlled by the graft, or that it in time becomes simply what the graft makes it when its own growth has been constantly suppressed, but I believe that putting a weak graft upon a vigorous stock, and encouraging the one and suppressing the other, is a pretty sure way of enfeebling both, if not, in the case of the Rose, of killing them outright. It is a fact at all events which has been often enough verified, I should suppose, that when weakly Roses on the Brier stock die, not being killed by frost, the stock dies too, unless it has been allowed to make a partial growth of its own. It is not a little singular that Lindley, who held that root vigour depended largely upon a healthy top growth, should have overlooked this fact in relation to grafting, considering how fully he has treated the subject, nor does the idea ever seem to have occurred to those who have taken up the subject of vegetable physiology where Lindley seems to have left it.

I may be allowed to mention that some years ago I pointed out similar facts to those recorded above in THE GARDEN and elsewhere in relation to weak-growing and variegated plants, stating that so long as healthy or green branches were preserved on the plant, whatever it might be, weak or perfectly-blanching leaves and limbs thrived, but that they perished soon after the former were removed.

J. S. W.

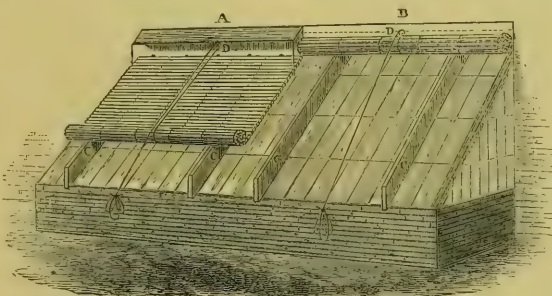
EFFECTS OF FROST ON ROSES.

INDUBITABLY we have had as severe a winter here on the Yorkshire uplands as anywhere, and perhaps a longer one than has been experienced in some parts. The snow began falling about November 6, and it was scarcely ever off the ground till the beginning of March; since then, too, we have had more snow and some frosts. I had, consequently, much anxiety as regards our Roses, and more especially for about 200 plants of good kinds that we had planted just before the snow fell. In looking over them a few days ago, however, I found there were not above three or four of the whole lot injured, and they were weakly ones to begin with. All are on the Brier stock, and consist of standards of all sizes. Whether they will yet show signs of injury I cannot, of course, say, but the buds look promising at present. I attribute their safety almost solely to the fact that as soon as they were planted, owing to the frost and snow setting in, I had them all thickly protected with stable litter over the roots and up the stems 6 in. or 9 in. My experience is that without such protection autumn-planted Roses in such winters as that which we have just experienced have little chance of surviving. Another thing which accelerates the action of the frost is autumn pruning. Pruned Roses always suffer most severely in hard winters. Pruning therefore should be delayed till spring, and, as a precaution against frost, newly planted Rose borders and beds should always be covered deeply with leaves or litter.

J. S. W.

Marechal Niel Rose.—The most satisfactory way of growing this beautiful Rose is as a roof climber, where it can be allowed to extend its branches as it pleases. We have two plants of it covering

the roof of a large house, from which hundreds of beautiful blossoms have been cut, and yet buds in various stages of development still remain. As regards pruning, we merely cut out weakly or worn-out shoots after flowering, and train in vigorous young growths at full length. These produce a great abundance of fine flowers. Beautiful as this Rose is, it is not adapted for a standard, as close pruning destroys nearly all chances of bloom, but anyone giving it a trial under glass will be well rewarded for any care that may be bestowed upon it.—J. GROOM.



New Bamboo Shading.

BAMBOO SHADING.

We have received from the New Plant and Bulb Company, Colchester, the annexed illustration showing the way in which this new shading, to which we have previously alluded, is used, and also the way it is made. It consists of light Bamboo rods a little stouter and stronger than Reeds, varying from 3-16ths to 3-8ths of an inch in diameter, the smaller size alternating with the larger size, while stouter rods, 3 in. thick, are interspersed here and there to strengthen the whole, which is interlaced about every 9 in. apart with a coarse, strong, and durable twine made from the outer husk of the Coconut. These mats are made in widths of from 8 ft. to 10 ft., and of any length required. The rods, when put up, run horizontally; the mat being perfectly flexible and very light, can, when in use, be easily rolled up by a cord fastened above, passing downward and beneath the mat, round the roller of the mat at its lower margin, then up again to the top, whence passing over a screw pulley, the cord descends again to the bottom of the mat, where it is within reach of the manipulator.

A shows the Bamboo mat partially unrolled, with box at top complete for its protection.

B—cover of box removed to show the mat rolled up when not in use.

CC—bearers upon which the mat is supported 10 in. or 12 in. above the level of the glass.

DD—screw pulleys round which the cords run to pull up the mat.

In order to let down the shading, loosen the cords which have been fastened to the hooks placed in the front wall below the glass; the mats will then fall down by their own weight. In rolling up again, see that the cord hangs straight down the middle of the mat, then pull up steadily and fasten. The mats are fastened above to

five or six staples, firmly driven in at the bottom of the box cover inside, by tying to them the thick Bamboo at the end of the mat with strong twine. It is as well to have a wooden roller tied by string to the lower end of the mat to make it roll up more easily.

TREES, SHRUBS, AND WOODLANDS.

HEDGES AND SCREENS.

WELL-GROWN and neatly-kept hedges add much to the general good appearance of a garden, and when, as is frequently the case, they constitute the sole boundaries, no pains should be spared either in forming them or in maintaining them in good condition. The occupiers of small gardens cannot often indulge in the luxury of walls, but they may, by means of hedges and screens, provide for themselves a considerable amount of shelter. The sunny side of an evergreen, or even of a good thick Quickset, hedge may be utilised for forwarding early vegetables, and the north side would prove equally useful for sheltering pot plants from the hot sun, or for planting out Primroses, Violets, and other shade-loving subjects during the warm summer months. Hedges often present an unsightly appearance through either having been badly planted or neglected at some period of their growth. If the ground is trenched and plenty of manure put into it a free, healthy growth and a handsome fence will be the result. The reverse of this treatment is, however, too often practised; the plants are set in poor soil, they become stunted, and are years in obtaining the desired dimensions. Thorn and Holly may be considered the most serviceable plants for boundary fences, and when well planted and carefully tended, they will serve even more effectually than walls to protect a garden against intruders. If utility and cheapness be alone to be held in view Thorn must be chosen. It may be purchased at a cheap rate, will thrive in any well-enriched soil, and, if generously treated, will form a dense impenetrable fence. If allowed to run up to the height of 15 ft. or 20 ft., it forms in bleak, exposed districts an admirable protection to fruit tree plantations. In the high-lying and sea-blown fruit-growing districts of the Isle of Thanet it is frequently thus employed. If planted in well-enriched soil at the same time at which the fruit plantation is formed, it will, by the time that the trees come into bearing, effectually screen them from rough winds. Quickset may be planted at any time during winter and early in spring, but the best time is undoubtedly as soon as the leaf has fallen; the roots are then fairly active and immediately establish themselves in the soil; they thus get much better hold, and are enabled to start more strongly into growth the following season than when the planting is deferred until a later period. After the ground has been properly stirred and manured it should be levelled; a line should then be stretched upon it from end to end; then commence at one end, taking out a spit of soil and cutting down perpendicularly by the line; place the young Quickset so that the roots are evenly spread upon the soil and the stem hard against the line; fill in with earth and tread firmly. Work through the whole distance in this manner, setting the plants about 1 ft. apart. It is not advisable to cut the plants back the first season, but the second year they should be pruned in to about 18 in. from the ground; they will then, having got thoroughly established, break and grow very strongly the following season. Cleanliness during the summer months is of great importance; not a weed should be allowed to encroach upon the plants, and if a mulch of rotten manure can be afforded them, it will exercise a great influence upon their growth. It must never be forgotten that a hedge is of no real practical value if it be not so closely furnished at the bottom as to be perfectly animal proof. This desired result can only be attained by cutting it back rather closely for several successive seasons, thereby favouring the development of the lower portion, which should, in every case, be maintained somewhat thicker than the upper part. A perfect Quickset hedge should slope gradually from the ground upwards, and throughout its entire length it should be so close that the hand could not be passed through it.

Old hedges that have, through neglect or ill-usage, become unsightly, may be, to a certain extent, renovated. The best way is, undoubtedly, to grub them up, heavily manuring the soil and planting afresh; but such a process entails more labour and expense than many are willing to incur; others, again, object to laying their gardens open for the period of time necessary to bring the new hedge up to the required height. It frequently happens that Couch and, in many districts, Bindweed have taken possession of the soil, and have starved the Quick into a state of debility, and denuded the bottom of foliage. The only remedy in such a case is to trench down on one side of the hedge, extracting all the roots of these weeds, working in a liberal application of manure, and allowing the Quick to grow unrestricted for one season. This treatment will induce a

renewed root-action, and the following year clipping may again be practised, keeping the sides closely cut in, but allowing the terminal shoots to grow until the autumn, when they may be cut back again. By following up this system for several successive seasons, a great improvement will be perceivable; and if, in addition, some free-growing Holly or Privet be introduced at intervals, they will, in time, completely refurbish the lower portion.

For beauty, combined with utility, no known plant can rival the Holly; it is even more impenetrable than Thorn, and its evergreen character renders it pleasant to the eye in winter. Holly will thrive fairly well in almost any soil, if well drained, but it prefers a sandy loam, in which it attains a high degree of luxuriance. On high-lying and dry sandy or gravelly soils it appears to be quite at home, and some of the best hedges which I have ever seen were on land of this description. At Oatlands, near Weybridge, on very poor, but perfectly drained, land there are some magnificent examples of Holly hedges; in fact, they might be termed Holly walls, they are so high and thick. Holly is commonly reputed to be slow as regards growth, and many are deterred from planting it, fearing that a long period must elapse before an efficient fence can be formed. It is true that in poor soils young plants will often require years before they increase much in size, but if planted in well-manured and deeply-trenched ground, they shoot up with great rapidity. Holly cannot be relied on to live if planted between the middle of October and the end of March. It must be moved before the roots have gone to rest, or at the moment when they are beginning to move. In September or April not 2 per cent. will perish. A Holly hedge may be made to assume a very ornamental appearance if a terminal shoot be allowed to run up at intervals, and be either grafted or budded with the golden or silver-leaved varieties. When the variegated kinds have attained sufficient dimensions to display themselves, they produce an extremely good effect, and impart an air of richness and cheerfulness to the garden itself. From the fact of the Holly being known to prefer dry situations, it is generally considered necessary to plant it somewhat above the level of the soil; but unless the locality be very low and damp, there is no need to incur this extra amount of labour. If 2½ ft. of well-drained soil can be secured it will succeed as well as when planted at a raised mound. The directions given for Quick planting will apply to the Holly, except that the distance between the plants will naturally be determined by their size. Some, to whom expense is no object, will prefer to employ large plants; but, in a general way, I would recommend young thrifty two-year-old seedlings, which often establish themselves better and outgrow older plants.

Privet may be employed either alone or mixed with Thorn. It forms a neat hedge and is evergreen, but it makes an enormous amount of surface roots, which entirely rob the soil around it of nourishment and moisture. Where Privet is employed the path should be next to it, or the ground must be trenched down every two years and the roots cut off. Privet is more suitable for separating plots of land or dividing the pleasure grounds from the vegetable garden than for forming boundary fences. It makes a compact hedge when kept down to about 4 ft., but it is hardly robust enough to be of service where a strong, impervious 7-ft. fence is necessary.

Yew is sometimes employed as a fence with good effect. It succeeds well in some soils, but it cannot be considered a suitable subject for general purposes, as it is easily penetrated, and is apt, after attaining a good size, to die off in hot summers; moreover, owing to the danger incurred by cattle browsing on it, it cannot be employed in many situations. A purpose for which it is well adapted is forming screens in the pleasure ground, or where sheltered spots are needed in plant culture. It makes noble walls of verdure, and when allowed to run up some 10 ft., and kept closely clipped, both the sunny and shady sides may be profitably utilised. In old gardens Yew screens are often seen, but other quick-growing Conifers have now supplanted Yew for this purpose.

Leafy walls, if I may be allowed to use that term, are preferable for some purposes to brick walls, especially in summer, as they not only afford a cool, shady retreat, but they allow air to constantly percolate through them, which cannot but prove beneficial to such plants as may be placed under their shelter. Thuja Lobbi and Waxana are two good subjects for this purpose; the former grows quickly, and the latter presents a very close and neat appearance. Beech is sometimes used in nursery grounds for protecting choice shrubs, and it is very serviceable for that purpose. In bleak situations it forms an efficient shelter for the best varieties of Rhododendrons and Chinese Azaleas, which are apt to get beaten about during the flowering season if too much exposed to rough winds. Where plant-growing is conducted on a large scale, screens having various aspects should be specially designed, a command of which and of shelter often proves of the greatest service, and considerably facilitates the labour of the grower. J. C. B.

THE BUTCHER'S BROOMS.

The five known kinds of Butcher's Broom are decidedly ornamental, as well as curious, plants, and are well worth a place in gardens. With one exception, they are hardy, and in a state of Nature are distributed throughout Europe, temperate Asia, and North Africa. All, except the one placed last in the list given below, are also of great use in planting under the drip and shade of trees where but few other evergreens would exist. The most ready method of propagation is by division of the roots. The true leaves are minute, scale-like bodies, very inconspicuous, and from the axils of these spring the flattened, leaf-like branches, which assume the appearance and perform the functions of real leaves; these branches are technically called cladodes.

The Common Butcher's Broom (*Ruscus aculeatus*), represented by the accompanying woodcut, is by far the best known of the group. It is a true native of England, where it is found in



Common Butcher's Broom in Flower and Fruit.

coppes and woods from Suffolk and Glamorgan southwards, being naturalised in Scotland and Ireland. The small greenish flowers, which appear in April, are borne on the rigid, spiny, somewhat egg-shaped cladodes, and are succeeded by bright red berries about the size of Peas. This dwarf, dense, much-branched shrub rarely attains a greater height than 2 ft.; its thick, white, twining roots strike deep into the ground, and when once established, even under apparently very adverse conditions, it grows freely.

The Alexandrian Laurel (*Ruscus racemosus*) is an elegant shrub with glossy, dark green, lance-shaped cladodes, larger than those of the common Butcher's Broom, the inflorescence of which is very different, the flowers in that being borne singly on the cladodes, whilst in the Alexandrian Laurel the blossoms are produced in terminal racemes. The habit, too, of this plant is not nearly so dense as that of the last-named, but it grows to about the same height. A native of Portugal.

The Broad-leaved Butcher's Broom (*Ruscus Hypophyllum*) is a very dwarf kind from the South of Europe, with

lance-shaped cladodes 2 in. or more in length, and nearly an inch in width. The blossoms are—as implied by the name—produced from the under surface of the cladodes.

The Double-leaved Butcher's Broom (*Ruscus Hypoglossum*) also comes from the same region as the preceding sort, and is very similar in general appearance, size, &c., but it has the flowers on the upper surface of the cladodes, each flower having a smaller cladode overhanging it.

The Great Alexandrian Laurel (*Ruscus androgynus*) is the only member of the genus which will not flourish in the open air. It is a very striking greenhouse climber, requiring ample space for its full development. There are two magnificent examples at the Crystal Palace, where portions of the galleries at the south end of the building are draped with its beautiful evergreen covering. The long shoots, some of which are 40 ft. or more in height, last for several years in full vigour and beauty, and as they die off others are produced from the root. At Kew, too, surrounding one of the staircases of the gallery in the temperate house, there is also a fine plant. Nothing could surpass in these positions the beauty of the specimens we have named. The young thick shoots grow up in a single season 30 ft. or more, and then commence to give off branches down to the very ground. These branches are from 2 ft. to 2½ ft. long, and have much the appearance of large pinnate leaves; the blossoms are borne in three round the edges of the cladodes. A native of Madeira and the Canary Islands. G.

WOODLAND WORK FOR MAY.

DURING the present month the forester's chief aim should be to secure his Oak bark, and to prepare it for delivery to the tanner in the best possible condition. As the bark season is nearly a fortnight later than last year, it will probably prove a short one, for if warm weather sets in the trees will rush rapidly into full leaf, after which the stripping will be difficult, and the loss of weight will be considerable. For the time, therefore, all other operations in the woodlands should give place to this. At present very low prices are offered by buyers, not more than £4 per ton in the woods; but neither the stocks on hand nor the quantities which are likely to be offered during the season warrant the acceptance of such a price, and if vendors remain firm prices must shortly improve.

Every possible exertion should now be made to clear away from the coppice all poles, faggots, and brushwood, and to take up whatever has been laid upon the stools to facilitate carriage from the falls. No horses should be allowed to remain unmuzzled in the falls after the appearance of the young shoots, and to ensure an early clearance of the produce, the conditions of sale should be strictly enforced. Even with the most careful supervision a great deal of mischief is done to the cut stools in coppices by the feet of horses and the wheels of heavy carriages where the produce is not carried to the sides of brushed roads for loading. To avoid unnecessary traffic in the falls the stripped bark should be staged near the sides of clearance roads, and the fallen trees, together with the tops, should also be speedily removed. Injured stools may still be thinned off smoothly and evenly with the adze, and where it is customary to thin out the shoots in falls made two years ago, this operation should now be performed. By selecting from four to six strong shoots, according to the strength of the stool, and removing all the others, a much more valuable crop of poles will be grown than can be obtained by allowing all the shoots to grow on together until the period of falling. This practice is remunerative under all circumstances, and where the produce of coppice bark is a principal object it is indispensable.

Wherever plants of a large size have during the past season been put out into the woodlands, these will now require going over and treading up. Evergreens in exposed situations may also require staking and tying. Wherever it is now considered advisable to remove evergreens of large size, these should remain out of the ground as short a time as possible; and such as have to be carried a considerable distance should either have a ball of earth attached, or else their roots should be well puddled as soon as the plants are taken out of the ground. With careful removal and one copious watering, such plants may be considered safe.

In the nursery finish the sowing of Coniferous seeds, and protect those young plants which are just appearing above ground from the ravages of birds and from destruction by late frosts. The transplanting of Coniferous seedlings should be finished as soon as possible, and all seed-beds should be carefully weeded by hand before the weeds gain sufficient hold of the ground to cause the disturbance of the young plants by their removal. Wherever the seed-beds have become battered, and the surface hardened by the late heavy rains, a careful rolling with a light spiked wooden roller is a much safer plan of loosening the surface than raking. The hoe will now require to be kept constantly going between the rows of young plants, and

the frequent use of the fork among those of larger size will greatly promote the growth of fibrous roots. The beds from which strong deciduous plants have been taken should now receive a good stirring with the fork, and have all the broken roots removed from them, preparatory to the planting of the green crops, which, with a liberal dressing of manure, should precede the next tree crop.

Now that there is little danger of sharp frosts, the trimming of evergreen hedges, such as Box and Holly, may be at once completed. When this is done too early in the season, the frost is apt to whiten and render unsightly the cut leaves and branches. Wherever labourers are plentiful, draining, enclosing, and road-making for future nurseries and plantations may be proceeded with; composts may also be made, or turned over and mixed with lime, for future use; hedges may be cleaned, grafts attended to, and have the clay renewed where required. Grass seeds may also still be sown in wood-rides, or in situations where they may be required to increase the cover for game. The best results will be obtained upon land which, after a thorough cultivation, is well rolled down before the seeds are sown and lightly bush-harrowed afterwards. The lighter Grass seeds are covered the better. A. J. BURROWS.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS.

Aucuba Berries.—Mr. Tillett's experience seems very "exceptional," for with us this season many of the plants are quite loaded with berries and are exceedingly attractive, and the plants were treated in all respects as "J. G." (p. 289) recommends. Since reading Mr. Tillett's remarks, I had the curiosity to measure the distance between a male and female plant, and found it to be 48 ft.; yet the female plant was well covered with berries, proving that a few male plants thinly dispersed over a large tract of ground are sufficient. I have long discarded the practice of artificial fertilization, finding results without it equally satisfactory. The green-leaved varieties bear much larger cluster of berries than the ordinary *Aucuba japonica*, and on them the red fruit is shown off to better advantage against the self-coloured leaves. Is Mr. Tillett sure he has got male plants? If so, I can only account for his failure by the pollen having been destroyed with spring frosts before it became matured. In such a case I would recommend Mr. Tillett to put a few Spruce branches over his male plants this season—just enough to protect them when in flower.—A. H. R.

Ribes sanguineum.—This beautiful flowering Currant, when planted in shrubby borders, should occupy an open position, where it can get full sunlight and exposure, so that the growth may become dwarf and floriferous, for, if planted in half shady positions, very little of its best effects are visible, and its wood does not get ripened. We have at present some bushes of it that well deserve the name of Burning Bush, for being planted on the outskirts of clumps in the park, they form brilliant spots of colour that are effective several hundred yards off. From the exposed positions which they occupy on breezy hillsides the growth is short and stubby, and they flower so exceptionally abundant that they look one solid mass of glowing red.—J. GROOM, *Linton*.

Pinus insignis.—In answer to recent inquiries for rates of growth of this Pine, I may quote two specimens here, in sheltered situations, about a mile from the shores of the stormy Atlantic. One was planted in 1842, and is now more than 70 ft. high; it girthed 2 ft. 6 in. at 3 ft. from ground in 1856, and now girths 9 ft. 3 in. at the same point. The other, planted in 1856, is now 50 ft. high, girths 7 ft. 6 in. at 3 ft. in height, and has a well-balanced mass of dense foliage, averaging 40 ft. across from tip to tip. Each plant was a nursery seedling. The fertile soil of Ireland will probably produce more rapid growth than either of these specimens exhibit, but in our poorer soil they prove that the climate suits them. No Pine that has been tried here can approach *insignis* for vigour, beauty, or shelter, and not one of the many hundreds that I have shown any trace of the severity of the past trying season, which has been so destructive to half-hardy plants.—J. J. ROGERS, *Penrose, Helston*.

The Sweet-scented Shrub.—Every one knows the Sweet-scented Shrub (*Calycanthus*). As children we have doubtless rolled its chocolate-coloured flowers in our handkerchiefs and inhaled their sweet odour, and that of its camphor-scented wood; but do we realise the plant's full excellence? It has become so common, that, like all familiar things, it has failed, perhaps, with time to retain its proper hold on our regard. There are several varieties, the best known of which are *C. floridus* and *C. levigatus*. Then there is *C. macrophyllus* of the Pacific coast, which is not quite hardy, and several others of less value. The kind, however, that is best known to us, and which is at the same time the best plant, is *C. floridus*. It has

the largest flowers and leaves, and is of unquestioned hardiness and vigour, well suited in every sense to do good service on the lawn. It may not have the high degree of excellence possessed by some other shrubs that could be named, but its foliage is rich and shining, quite noteworthy in general character. Its curious reddish-brown or purple flowers, moreover, form a feature possessing much interest. The *Calycanthus* has been thought in the past a somewhat difficult plant to grow, but it is really not specially difficult to propagate from root cuttings. Seed would, of course, produce it, but seed is not easily obtainable, and in other ways affords a less ready method of propagation. Altogether, the Sweet-scented Shrub (*C. floridus*) is a fine old hardy plant that we cannot afford to neglect.

The Siberian Stone Pine (*Pinus Cembra* *Mandschurica*).—In Italy we have the Stone Pine (*Pinus Pinea*), somewhat umbrella-shaped in contour; Switzerland and Northern Europe contribute the Swiss Stone Pine (*Pinus Cembra helvetica*); and Siberia the Siberian Stone Pine (*Pinus Cembra Mandschurica*), the tree which we specially wish to note. The Italian Stone Pine, though picturesque, is not hardy in our climate, and so I pass by it without further comment. Swiss Stone Pines are more or less common, and always admired on the lawn. Their excellences have received a fair degree of attention, although no more than they deserve; but I hardly think the same can be said of the Siberian Stone Pine (*Pinus Mandschurica*). Yet it is altogether a more noteworthy tree. The leaves are stronger and massed together in a more effective way. Broader contours and greater height also give it more imposing qualities. It has, indeed, according to Gordon, been known to grow 100 ft. in height. Pines, in their breadth and masses and drooping grace of clustered needles, are, in some sense, the Palms of the north, and among Pines few are more effective than the Siberian Stone Pine, with its great cones of extraordinary length. These reddish-brown cones of such unusual size are very effective, contrasting in autumn with the long, heavy, hanging Pine needles.—"Rural New Yorker."

NOTES OF THE WEEK.

Successful Growth of Alpine Flowers.—We notice *Gentiana verna* thriving as freely on an exposed border in the Rev. Mr. Ewbank's garden at Ryde as the common *Gentianella* (*G. acaulis*) frequently does in "old-fashioned gardens," where it gets a chance. We have long been convinced that *Gentiana verna* would thrive freely on the level ground, whereas it generally perishes on rock gardens of the common type and in frames. In the same garden a still more delicate Alpine flower (*Androsace carnea*), also on a border, is now a cushion of green decked with pink blossoms, the plant being surrounded and in a way protected from accident by a few half-buried bits of sandstone. Near it likewise grows the rare and fragile little *Petrocallis pyrenaica*—very seldom seen, even in botanic gardens where Alpine plants are grown—also a mass of lilac blossoms. Mr. Ewbank protects his dwarf and delicate plants very successfully by placing a ring of perforated zinc around them, which keeps off the slugs, creatures which, if allowed their own way, frequently graze down dwarf Alpine plants in a single night. The climate is favourable, though often too hot in summer for Alpine plants.

The Crimson and Yellow Alpine Polygala.—This brilliant Alpine plant, figured in *THE GARDEN* some time ago, is one of the greatest gains among hardy plants introduced for years into our gardens. We say so much, judging from a small but healthy specimen of it now flowering in Mr. Ewbank's garden, near Ryde. The plant we figured it from was, no doubt, from being imperfectly established, rather in a weakly condition, though its beauty was so manifest that we did not hesitate about devoting a coloured plate to it. But this sturdy little plant, in the open air, is far finer—so beautiful, indeed, that an enthusiast would not hesitate to build a rock garden for it, if that were necessary, which it is not, Mr. Ewbank's plant growing on a gently-raised bank. The flowers are handsomer than those of any of the greenhouse *Polygalas*, seated on a sturdy evergreen, $\frac{1}{2}$ in. high, every flower being quite "true" in its rich colouring. We note this last quality in reference to the supposition that the plant was but a discoloured variety of *Polygala Chamebuxus*.

Tulip Cultivation in Holland.—The Dutch official trade returns show that the exports of flower bulbs during the sixteen years from 1861 to the end of 1876 amounted in value to 19,640,000 Dutch florins (about £1,636,000), or an annual average of over £100,000. It appears that the value has been annually rising; thus the export for 1876 is set down at 1,666,000 florins (nearly £139,000). According to the latest survey the land devoted to rearing bulbs of Tulips, Hyacinths, and similar flowers amounts to 240 hectares, or

nearly 600 acres. Of these about 10 acres are in the neighbourhood of Egmout, about 90 round Velsen, while the remaining 500 acres are in the neighbourhood of Haarlem, Schoten, Bloemendaal, and Hemstede. But besides these special localities, where the cultivation of the bulbs is carried out on a large scale, there are innumerable small patches scattered all over the country where Tulip and Hyacinth bulbs are reared with great care and success.

Azolla pinnata.—This extremely interesting flowerless plant may not inaptly be named the Floating Selaginella, to the smaller-growing kinds of which it bears a remarkable resemblance. Each plant is about $\frac{1}{2}$ in. in diameter, of irregular outline, and emits a tuft of thread-like roots from the under surface. The upper surface is bright green, except the edges, which are tinged with a reddish hue, and the whole, when minutely examined, sparkles with crystalline brightness. For small indoor aquaria it would be a charming acquisition, as it appears to be indifferent as to the precise temperature of the water in which it floats; it may be seen flourishing in the Victoria tank at Kew, and also in inverted bell-glasses in a cool house. Like many other aquatic it has a very wide geographical range, as it inhabits the pools of the warm temperate parts of the Northern Hemisphere as well as those of the Southern.—W. G.

New Muscari.—In "Notes from Kew" last week allusion was made to a novelty under the name of *M. Pinardi*, but which is now proved to be *M. armeniacum* (syn., *Botryanthus armeniacus*). It is, undoubtedly, the finest of all the kinds in cultivation; its dense racemes of blossom are nearly 3 in. long when fully grown, and their colour is a clear cerulean blue before expansion, deepening into a rich indigo tint, with the pure white teeth quite obliterated; it is also very floriferous, as the Kew plant produced three spikes in quick succession from each bulb. It is evidently allied to *M. Heldreichii*, but differs from it in having broader and much longer leaves; from its specific name we may infer that it comes from Armenia. *M. Pinardi* is also a new plant, but it belongs to the other section of the genus, viz., the *Leopoldias*, in which the racemes are long, each being terminated by a conspicuous tuft of barren flowers.—W. G.

Large Camellia.—Close to the old mansion belonging to the Earl of Kenmare, at Killarney, is growing a magnificent specimen of the old *Camellia reticulata*. It is about 45 ft. in circumference, though but some 5 ft. or 6 ft. in height. When we saw it in the early part of this month, says the "Gardener's Record," the flower buds could be counted by the thousand, many of them having just commenced to open. It is the most vigorous health possible, as its dark green foliage testifies, and the past severe winter does not appear to have injured it in the least, though the only protection afforded was a piece of old canvas placed over it when the frost was most intense.

Gloneria jasminiflora.—At first sight this handsome new plant might easily be mistaken for a Jasmine. Its habit of growth is erect and bushy, and it has ovate leaves 3 in. long arranged in opposite pairs. The clusters of blossoms terminate the branches, and consist of about a dozen in number, each having a narrow tube $\frac{1}{2}$ in. long, and a four-cleft corolla $\frac{1}{2}$ in. across. The whole flowers of snowy whiteness, and the outside of the blossoms are covered with white down. Some trade lists class this *Gloneria* with stove plants, but most probably a greenhouse temperature will be found most congenial to it. It produces its blossoms during the winter and spring months.—W. G.

The Blue Polyanthus (*Primula elatior cerulea*).—This old garden favourite, well-nigh lost to cultivation, is flourishing on the rocky at Kew and producing blooms in profusion, but they are slaty coloured rather than true blue. They are, however, the nearest approach to blue that we have in the Polyanthus, and on that account the variety is desirable. Another beautiful plant belonging to the same charming family, and a very free flowerer, is *Primrose Golden Prince*, which has the deepest yellow flowers of any we know of; it has been the admiration of all who have seen it.—W.

Alpine Primroses.—Amongst the numerous kinds of Alpine plants that flower at this season of the year Alpine *Primulas* are, perhaps, the most conspicuous. Of these we noticed the following in bloom the other day in the York Nurseries, viz., *Primula latifolia*, *viscosa*, *villosa*, *Allioni*, *marginata*, and its large-flowered variety, *tyrolensis*, *Venzoi*, *pubescens*, *nivalis*, *purpurea*, *pulcherrima*, *rhaticola*, *Floerkeana*, *spectabilis*, *auriculata marginata*, *Babissiana*, *glaucescens*, *rosea* (nearly over), *ciliata*, *Dinyana*, *gracilens*, and multi-caps.—P.

Wellingtonia Wood.—We have, says Dr. Woodman, of the Exeter Nurseries, sent out all our Easter flowers this season in boxes made from the wood of the *Wellingtonia gigantea*, grown by ourselves. We had occasion to cut down a grove of these trees to make room for other plants, so we utilised the timber, which is like Larch, but has a vein of pink running through it.

The American Dog's-tooth Violet.—By this we mean the rich yellow *Erythronium americanum* so common in the Atlantic States, and not the paler and, as we think, poorer yellow kinds lately brought from California. *E. americanum* is in flower now, and very beautiful it is, so much so that it is surprising it is not as much grown as the European Dog's-tooth Violet (*E. Dens-canis*). *E. americanum* would not appear to thrive on all soils, for we fancy it often fails to flower where it seems to grow fairly well.

Artisans' Plant Show.—The show of this kind held in the gardens at South Kensington last year having been attended by as many as 16,000 of the artisan and labouring classes, there will be a similar exhibition there on Whit Monday, June 2. In order to place this source of enjoyment within the means of the poor, 2d. only is to be charged for admission; and as the cost of the show is very great, it is hoped that contributions will again be made to the prize list.

The Marnock Portrait.—Mr. T. B. Wigram's portrait of Mr. Robert Marnock has been accepted at the Royal Academy, and is well hung in the centre of the Lecture Room. The portrait is considered a most excellent one, both by artists and those who know Mr. Marnock. Our readers will remember that this is a presentation portrait offered to Mr. Marnock by a number of admirers of his work as a landscape gardener.

Odontoglossum vexillarium.—There is now a grand display of this *Odontoglossum* in Mr. Bull's nursery, King's Road, Chelsea. It consists of 300 expanded flowers, some of them the highest and richest coloured varieties that have ever yet been introduced.

Botanical Diagrams.—Dr. Arnold Dodel-Port is publishing at Zurich a series of botanical and physiological diagrams, which will be useful in schools and for botanical lecturers. Specimens of them may be seen at the Linnean Society.

ANSWERS TO CORRESPONDENTS.

Hyacinth Blooms Severed from the Bulb.—Along with this I enclose two flower-stems of *Hyacinth* grown in the open air, and should be obliged if you or any of your readers could tell me whether they have been severed from the bulb by slugs or other vermin. I also send the bulb and foliage of one in case it may grow again. I may mention that I have a bed of *Hyacinths*, blue, white, and red, all sent over to me last year, and only the blue (but of a large number of them) have been thus treated. The bulbs seem to be sound, even after the hard winter which we have had, and are throwing up very large spikes of flowers where unturfed. They are growing in a bed made up two years ago of road scrapings, turf, and leaf-mould, which has since been liberally manured, and has grown bulbous as well as bedding-out plants each year since. All the sound flower-spikes are now about 3 in. clear of the ground, and seem to be out of danger. As all the injured ones seem to have been cut about the same time and height, and as they rested on the foliage in a natural position, they were not noticed until the sound ones began to distance them in growth. The bulbs came from Holland direct, and the three colours are furnished respectively by Van Thuyll, Queen Victoria, and Robert Steiger.—B. J. B. [The flower-spikes sent look as if they had been eaten off by slugs.]

Greenhouse Shading.—What is the best preparation for "muffling" the glass of greenhouses (outside) such as will not be washed off by the action of the weather, and which can be washed or rubbed off at the end of the summer? I have been using whitening and milk, but find it is washed off sometimes by heavy rains.—SUBSCRIBER. [A little size added to the whitening and milk will cause them to adhere.]

Pears from Monte Video.—I have sent you to-day two Pears. They are from a barrel received from Monte Video. They are so good and in such excellent condition, that I thought it worth while to send them as a specimen. I am unable to give you the cost, as the barrel was a present.—J. L. [The Pears sent were as J. L. says, very good—sweet, but gritty. They are large in size and look not unlike *Givier* of Winkfield.]

Protecting Seed Beds from Birds (p.356).—The best and most inexpensive way of doing this is to place sticks about 1 ft. in length around the bed, and tie black thread from one to the other, thus forming a net. I have tried this plan for several seasons, and I find it to answer admirably.—T. F.

Double-spaced Callas.—"*N. S. S.*"—These are not uncommon; an illustration of one was given in *THE GARDEN* (Vol. X., p. 56).

Names of Plants.—*J. M.*—undeterminable; 2. *Pulmonaria officinalis*; 3. *Fumaria capnoides*; 4. apparently *Genista sagittalis*; 5. *Porsythia viridissima*. *T. T. C.*—*Tydea*, and too withered to enable us to say what species. It requires to be grown in a moist, warm greenhouse. *Beta*—The Cape leaf is that of the Silver Tree of the Cape (*Ficus deltoidea* Hope (*Leucodendron argenteum*)). *M.*—Your *Acer* is *A. rubrum*, North America. It may be propagated by cuttings or by seeds, the latter being preferable. *Vitis*—1. *Dicksonia antarctica*; 2. *Doodia media*; 3. *Adiantum hispidulum*; 4. *Adiantum formosum*; 5. *Pellaea* (*Platyloma*) *rotundifolia*; 6. *Doodia candida*. *O. G. P.*—We cannot undertake to name plants from leaves only.

QUESTIONS.

Lily of the Valley.—Can any of your readers tell me whether it would be possible to grow Lilies of the Valley in Lucknow, and what is the best substitute for peat, which we cannot get here?—A LUCKNOW AMATEUR.

Fertilising Passion Flowers.—What is the *modus operandi* of fertilising *Passiflora quadrangularis* so as to obtain fruit? I have a fine young plant now showing abundant bloom in an intermediate stage. Should the shoots be stopped like those of a *Melon*? if so, should that be done before or after the expansion of the flower?—T. P.

GARDEN DESTROYERS.

OTIORHYNCHUS SULCATUS.

I HAVE selected this beetle for the subject of the present paper, as several of the correspondents of THE GARDEN appear to have recently had plants suffering from the attacks of the grubs of this insect, which belongs to the very numerous family of weevils, so many of which injure vegetation in various ways. Most insects are only injurious during one stage of their existence, but in the case of this insect both the beetles and grubs are very destructive to living plants. The grubs, however, are much more mischievous than their parents, and are only too frequently found destroying the roots of various plants cultivated in pots. When these plants begin to droop and wither without any apparent cause, the presence of these grubs may be suspected; and if they be the cause of the mischief, the roots of the plants will, on examination, be found to be considerably gnawed or eaten nearly through, generally just below the surface of the ground. Cyclamens, Primulas, Saxifrages, Sedums, and other succulent plants; Trollhuses, Adiantum pedatum, Strawberries, and Vines are the plants which suffer most from these grubs. The most certain way of getting rid of these pests is to replot the plants affected, taking care that none of the grubs are left among the roots or earth replaced in the pot. If replotting for any particular reason is undesirable, the roots may be examined by uncovering them as much as possible, for the grubs are generally tolerably near the surface. Watering the roots with an infusion of Quassia or Tobacco-water has been recommended. Mr. Dunn, in his "Report on Injurious Insects for 1878," states that he has succeeded in stamping out this insect in his Vineries and Peach houses by dressing the roots of the plants during the dormant season with hot lime, soot, or salt. The weevil at times does considerable damage to Vines, Peaches, and Roses by feeding on their young shoots. They are very difficult to find on account of their dark colour, and of their habit of only feeding at night, remaining hidden in some shelter during the day. They may, however, be caught an hour or so after dark by spreading white cloths under the plants, into which the beetles will fall when the plants are shaken. These cloths should be spread while it is still daylight, as the beetles often drop from the plants on the sudden introduction of a light. The weevils make their appearance in June, and should be destroyed as soon as possible, so as not to give them an opportunity of laying their eggs. These are probably deposited below the surface of the earth, near or on the roots of the plants on which the grubs are to feed. At first the damage caused by the newly-hatched grubs is not noticed, but in the autumn, when they have increased considerably in size, they should be searched for carefully, if there be any reason for suspecting their presence, as it is during the winter and early spring months that they do most injury. In May they descend an inch or two into the earth, and there form small smooth chambers or cells, in which they undergo their change to the chrysalis state. In this state they remain for about a fortnight, at the end of which they leave their chrysalis cases and come forth perfect weevils. They are now about $\frac{3}{8}$ in. long, and entirely black in colour; the head is produced into a long snout, with a deep longitudinal groove or furrow down the middle, the tip of which is furnished with a pair of long antennae consisting of twelve joints; that nearest the base is very long and somewhat curved; the remaining joints are small, and form quite an elbow with the long joint, the four nearest the tip forming an oval knob. The thorax is broadest in the middle, where it is considerably wider than the head; it is covered with small, raised tubercles. The wing cases are much wider than the thorax and are oval in form, being broadest about the middle; they are much rounded transversely, and are sparingly sprinkled with small brownish spots composed of minute hairs. The legs are strong and of medium length; the thighs of the front pair are much thickened towards the knee joints, and are each armed with a strong tooth. The grubs are about $\frac{1}{2}$ in. long, and are generally in a somewhat curved position; they are stout, fleshy, much wrinkled, considerably thicker in the middle than at either end, and are entirely destitute of legs. The joints are thirteen in number, well defined, and of a dirty white colour, sparingly covered with stiff, brownish hairs. The head is reddish brown, and furnished with a strong pair of jaws.



Otiorhynchus sulcatus.

THE GOAT MOTH.

In the excellent descriptive paper on the Goat Moth (*Cossus ligniperda*)—p. 297—"S. G. S." says, "there are, unfortunately, but few means of destroying this insect." As the insidious and destructive effects of the larvæ are much more prevalent than is generally believed, the following statement may prove helpful to those who have to contend with the evil in question:—About the year 1840 the Royal Botanic Society obtained possession of the Inner Circle in the Regent's Park, up to which time this circular plot of ground was occupied and familiarly known as Jenkins' nursery ground. Among the earlier operations of transforming the then pasture fields into what is now the Regent's Park, anxious, of course, to create as speedily as possible a woodland aspect, the then officers of Her Majesty's Woods and Forests made plantations along the boundaries and elsewhere, and a line of Elm trees was about the same time planted round the outer boundary of what is now the garden of the Royal Botanic Society. During the year 1841, when the formation of the garden was in progress, it was discovered that a large number of the Elm trees forming the belt surrounding the garden were more or less affected by the larvæ of the Goat Moth. Many of the trees were sick, and some so unhealthy as to be beyond recovery. The following remedy was at once adopted:—Every tree was carefully examined; the presence of the insect was readily discovered; a strong round carpenter's chisel and hand mallet were the implements employed, and wherever the insect was found the hole or gallery in which the larvæ were deposited was followed by cutting into the bole of the tree. In some cases this operation had to be carried to the centre of the tree, and, not infrequently, at several parts of the stem of the same tree. By many the operation was thought to be so violent, that the trees thus treated could not possibly survive. When this severe operation was completed, and the bulk of the enemy was supposed to have been dispersed, a decoction of salt, lime, cow manure, and horse manure was made into the consistency of a thick paste, and every hole or wound on the stem of the tree was carefully filled up with this plaster; as a consequence of the unhealthy condition of the Elms, occasioned by the larvæ of the Goat Moth, the trees become the natural prey of the Scolytus. These burrowing insects had seized upon sickly trees in such countless myriads that they could not, like the *Cossus*, be sought for and removed individually; a simpler process was adopted, namely, using a brush and smearing the stems with a thick wash of the same ingredients as that employed to fill up the wounds in the stem. This smearing process was repeated several times at intervals, until it formed a $\frac{1}{4}$ in. to $\frac{1}{2}$ in. in thickness over the entire stem of the tree.

It will be sufficient to state that the results of these two operations were completely successful. The wounds in the stems of the trees healed with remarkable rapidity. Possibly the *Scolytus* was unable to escape through the thick plaster coating on the stems and was suffocated. I refrain, however, to dwell on the causes which produced these effects. My present purpose is rather to simply explain the operation which led to the results which I have described above, and to suggest to those who are the owners of trees the desirability of maintaining a watchful outlook against the stealthy inroads of the two enemies in question, for they are unhappily much less rare than is generally supposed. R. M.

—"S. G. S." (p. 297) and others of your readers may like to know that I have found the following method of destroying the Goat Moth (*Cossus ligniperda*) to be effectual in the case of matured timber: When the trunk of the tree is attacked, surround the orifice with clay, which will readily adhere to the rough bark, and form the clay into a cup, into which as much coat-tar should be poured as the cavity within will contain. The caterpillar will either try to escape at another hole, if there be another, and can easily be killed, or it will be smothered by the tar. If the tar be thick a little benzoline will make it liquid enough for the purpose, and neither will injure the tree. In the case of a young tree being attacked the bark may often be carefully cut away with a chisel and the caterpillar be found.—J. J. ROGERS.

OBITUARY.

DEATH OF MR. MUDD.—We regret to have to announce the death of Mr. William Mudd, the Curator of the Botanical Gardens, Cambridge, after a brief illness. Mr. Mudd was an associate of the Linnean Society, and, as a botanist, possessed a high reputation. The stipend attached to the office is about £100 a year; it is in the gift of the Botanical Garden Syndicate. The late curator, however, made a good addition to his income by instructing pupils studying for the Natural Sciences Tripos and the special examination in botany, and was a great favourite with the younger members of the university.

S. G. S.

No. 290.]

SATURDAY, MAY 10, 1879.

Vol. XV.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

WEeping TREES.

THE remarks of Mr. Burrows (p. 235) on "Weeping Trees" brings to mind a notice of a Weeping May Duke Cherry which appeared in THE GARDEN some weeks ago, and which is said to bear fruit equally well as the type or May Duke of our gardens. I hope our friends will not lose sight of this interesting object. I may say that I have been quite fascinated with the idea of a Weeping Cherry loaded with fruit. Imagine a row of such trees on a border in a garden, worked say 5 ft. high, loaded with fruit and drooping to the ground! How easily such a row of trees could be netted when the fruit was ripe! I am afraid the idea is too fanciful to be realised. *A propos* of weeping trees, I saw, many years ago, in a nursery the *Cydonia japonica* worked on stems 7 ft. or 8 ft. high. I thought them very beautiful looking objects, but at that time I was not curious enough to notice on what stock they were worked; nor can I imagine any stock suitable for them, except the Pear, the Medlar, or the Mountain Ash. Do any of the readers of THE GARDEN know anything of this matter?

When speaking of the artistic value of weeping trees in high-class landscape scenery, I should think that Mr. Burrows had in view such bold trees as weep naturally, and not freaks and sports, such as the Birch, the *Salix babylonica*, the Beech, the Deodar, and others. I am not certain that Mr. Burrows is quite correct in advocating the isolation of such trees wholly on lawns, and I would point out that the beauty of such trees is very much enhanced by their proximity to others of an ordinary character. Who has not seen in some ravine or glen the white-stemmed Weeping Birch, waving its tresses of pendent spray among its companions? Such a tree in association is far more beautiful than in isolation. In a plantation of trees on the north side of a garden near here is a towering Weeping Birch which, as seen from all parts of the garden, seems to be the spirit of the whole place, and in reality neutralises the beauty of its surroundings. Yet I must maintain that this tree would look anything but well by itself; standing against the sky-line, it would, from its delicacy, be almost lost.

I quite agree with Mr. Burrows that the lawn is the proper place for such weeping trees as those with which we are familiar. They are, however, truly formal and avowedly artificial, and should be sparingly introduced, and in some instances not at all, and nothing but a vitiated taste would sanction their use in well-kept places. Their only position seems to be in association with architectural terraces, statuary, fountains, &c., for a tree with its branches all growing downwards is just about as natural as jets of water thrown upwards. The main fault with most of these trees is that the branches all droop from a given point, and only one; whereas, in such trees as the old Weeping Willow the falling tresses of spray are broken and diversified, like water in a mountain cascade. Allow me to point out a method by which this excessive formality may be modified. Take the Weeping Ash as an illustration; when planting this tree, fasten a stout iron rod to the stem, and let it extend upwards through the centre about a yard or so; to this upright rod train a branch vertically; it will soon throw out branches tier above tier, and the process should be continued till the desired height is attained, which may be 30 ft. This process will give the tree a pure fountain-like appearance, wholly distinct from the forms which such trees generally assume.

THOS. WILLIAMS.

Ormskirck.

A HISTORICAL YEW HEDGE.

HISTORICAL trees have long since found their poets and biographers. Who can forget Queen Cunigund's Lime tree in the courtyard of the Castle at Nuremberg, said to have been planted by that sainted, if somewhat mythical, lady at the beginning of the eleventh century? or King John's Oak, that patriarch of the forest, who still holds his own in "Merrie Shrewsbury," or his

Famous brother Oak
Wherein the younger Charles abode
Till all the paths were dim,
And far below the Roundhead rode
And hummed a surly hymn.

I do not know if anyone has treated of historical hedges; such a one is that which encloses the Rectory Garden at Bishopsbourne. On blustering and inclement Easter Monday the writer of this

note drove there from Canterbury, a distance of four miles on the Dover road; the last mile takes you through Bourne Park, a picturesque spot beautifully planted. Bishopsbourne itself is a small village, quiet and unpretending, but interesting to the student as the place where Richard Hooker spent the last years of his life, and where he composed that great work which has rendered his name immortal. He was a remarkable man in a remarkable age, a veteran in that mighty company of writers who adorned "the spacious times of great Elizabeth."

The object of my visit was to see his monument in the parish church, and the old rooms in the rectory which he had inhabited. The house has been modernised and enlarged, but two rooms in it remain as they were in Hooker's days, and the garden is almost entirely surrounded by a Yew hedge which he planted. Part of this is 36 yards in length; it is met at right angles by a shorter hedge, 33 yards long; both are from 12 ft. to 14 ft. high. There is a curious summer-house at the end out of the hedge, where it is much broader, and at least 20 ft. high. Two men are employed for a fortnight in September in cutting these hedges; they stand on the top to complete that part, and there is a firm path which supports their weight, as they only sink in a few inches. The hedges are about 9 ft. thick; behind them is a Grassy path, where tradition says Hooker used to walk, meditating his great work. No doubt he, with his friend Dr. Saravia, one of the prebends of Canterbury, passed many happy hours, as they

Discussed the books to love or hate,
Or touched the changes of the state,
Or threaded some Socratic dream.

Hooker, like many of the sons of genius, was (as we know) particularly unfortunate in his marriage. Unblessed by affection, he took refuge in friendship; and it is to one of those faithful and tried companions of his solitude that we are indebted for the interesting though uneventful record of his life.

All this came unto my mind as I walked in the rectory gardens with the rector's wife, who was a kind and patient cicerone. A Grassy bank sloped down from the hedge to the house, from which it was divided by a gravel walk. Several beds were cut out in this bank, which were filled by many of those flowers

Which their gay wardrobe wear
When first the Blackthorn blows—

Scillas, white and pink Hyacinths, and Daffodils. In this sheltered spot they bloomed freely while the east wind was blowing hard and the snow lay thick on the hills. Few were the traces of the spring outside; here and there, amid brown Grass and dead leaves, Primroses faintly shone in the banks and copses, but here in this favoured garden no wintry blast could reach April's first-born flowers.

I often wonder that gardens in exposed situations are not oftener enclosed and defended by Yew hedges. Perhaps their slow growth (the one I have described was planted the latter end of the 16th century), and the trouble and expense of having them cut, may account for this neglect. They are both useful and ornamental, and they give an air of retirement and privacy which is delightful. Bacon recommends "a stately hedge which is to enclose the garden;" but there is too much carpenter's work in it for my taste; I prefer something more natural, and would rather read about it in his charming essay than have it before my eyes in my humble garden.

Chaucer might have had my hedge in his mind, when he writes in "The Flower and Leaf" of a

Hedge as thick as a castle wall,
That who that list without to stond or go,
Though he should all day prien to and fro,
He should not see if there were any wight
Within or no.

But this hedge was set with "Sicamour and Eglatere."

A fine Yew hedge not far from here, in an old-fashioned pleasure-ground has always struck me very much. It divides a beautiful flower garden from a part devoted to more useful plants. It is 35 ft., or 40 ft. long, and 12 ft. or 14 ft. thick, and was probably planted about 200 years ago, being as old as the house, which is of that time. It was built by an ancestor of the accomplished author of the "Descent of Man," and still remains in the Darwin family.

N.

Toxicophlæa speciosa (Thunbergi).—Many complain that it is difficult to flower this fine Cape shrub, and under ordinary treatment this is true, but at the Alexandra Palace meeting lately have been seen a fine plant of it flowering most profusely. This plant had been grown well during the summer in a brisk heat well exposed, and during the winter it was allowed to get dry at the roots, though in a moderately damp atmosphere; this, it is believed, has been the cause of success. It is a plant which will stand a considerable amount of rough usage, and when in flower it is well worth a place in collections in which good flowers are valued. The

plant at the Alexandra Palace is 6 ft. high, and is clothed with foliage to the top, and bears bunches of white leaves in the axils of all the leaves.—J. CROUCHER.

Pinus insignis.—I quite agree with Mr. Rogers, that this Pine is beyond comparison the most beautiful of its family, but it is too tender for cold, exposed situations. Two-thirds of those planted by me on the Surrey Hills have been killed by the weather; those left have not suffered for the last two years, and may, perhaps, get used to our climate. Through England and Scotland generally, *Pinus austriaca*, as a screen and as shelter, is far safer than *insignis*; still, the latter should be planted all over large areas, for the chance of its thriving.—A SUBSCRIBER.

Butcher's Broom.—"G." (p. 363) is right respecting the common Butcher's Broom (*Ruscus aculeatus*) growing wild in Glamorganshire. In the woods at Penrice Castle, about 12 miles south-west from Swansea, it grows in carduels, but for my part I consider it neither very ornamental nor useful.—CAMBRIAN.

THE FLOWER GARDEN.

WALLFLOWERS IN CITIES AND VILLA GARDENS.

THE Wallflower is one of the most popular, as well as one of the gayest, of spring flowers. Although it thrives and blooms profusely in almost any situation, yet it never appears so appropriately placed as when growing in the immediate vicinity of dwelling-houses, which it brightens up early in the year with its fragrant flowers, the perfume of which is of the most agreeable and refreshing description. The Wallflower, like the Violet and the Primrose, is a universal favourite, and we scarcely seem to realise that spring has arrived until its cheerful blooms make their appearance. More especially amongst the poor is it cherished, not only in country districts, where it may generally be found flanking the cottage doors, but its low price places it within the reach of the working classes within our crowded cities, who can oftentimes indulge in the luxury of a bunch of Wallflowers when flowers in general are too dear for them to purchase. Any one who has visited Covent Garden Market during the early hours of a May morning will have remarked the fine bunches of Wallflowers which are bought up in large quantities by the hucksters and carried away by them to be sold at a cheap rate in poorer districts of the metropolis. These are, of course, grown in the vicinity of London, and they are so fresh and bright, and exhale such a delicious odour, that one cannot help wishing that every poor inhabitant of the great city might be enabled to brighten up their homes with them.

In most large gardens there are spaces which remain vacant, spots far removed from the dwelling which it is not considered necessary to occupy with bedding plants, or of which the soil is of a very poor description. All such unoccupied pieces of ground might be filled with Wallflowers; hard, strong, sandy soil in which most plants refuse to thrive will yield a rich harvest of bloom, and even odd corners may be made to furnish their quota of this easily-accommodated spring flower. To such an extent might Wallflowers indeed in many places be grown, as to render it no difficult task to cut a cartload of bloom in a week. Although we feel the need of flowers the whole year through, we yet seem now particularly to crave for their bright presence, when from a gloomy winter we emerge into the bright sunny days of spring. It is just at this time that bloom is scarce. In the summer there is, owing to the profusion of flowering plants that we now possess, no difficulty in supplying our flower missions. In the spring time growers are naturally reluctant to gather their first blooms, but if all the odd sunny corners and waste spots of ground were, as I have said, planted with Wallflowers, enough would be furnished to gladden the heart of many a poor sufferer, and that without in any way detracting from the appearance or in any way robbing the dressed grounds.

The Wallflower is of a hardy character, and if once planted and left undisturbed, allowing some seed to ripen, it will propagate itself without further trouble. If a large plant once seeds the immediate vicinity will be stocked for years. Cottagers scarcely ever take the trouble to raise seedlings enough to come up yearly to supply the places of those that wear out. It is true that the Wallflower, like all other plants, repays with interest generous culture, and that flowers obtained without any special care being expended upon their growth could not be expected to rival those which are brought into the market from good ground. But the poor accept with delight anything which presents the slightest appearance of bloom. Those who revel in floral beauty the whole year through can scarcely realise the intense pleasure which the commonest flower affords to a pent-up denizen of our great smoke-begrimed city; and could they witness, as

I have done, the care lavished upon such common plants as the Mistletoe, which have been dug up in the fields and sold for one-halfpenny each, they could not but be well assured that the gift of a bunch of fragrant flowers would be received with delight.

Apart, however, from this philanthropic view of Wallflower culture, there is no question that this plant might be made to play a more important part than it generally does in spring decoration. Cottagers are very partial to the Wallflower; they generally plant them close to their walls, near the entrance and under the windows of their dwellings. In such situations it luxuriates, for it never seems more at home than when the roots can in some way feel the bricks and mortar. It is in such places that the double varieties do best and live longest. They not only grow more freely, but they often escape the ruinous effects of a sharp winter when those in the open get killed. It is worthy of note, and probably explains in a great measure the comparative absence of these double varieties from villa gardens, that they are scarcely ever to be found placed in these naturally congenial positions. Being consigned to the borders, they seldom survive a very sharp winter, and it frequently happens that not a plant in the entire district escapes; the variety is then often lost for a number of years. These double kinds are grateful for a little protection, and they should receive it in severe winters. There should be no difficulty in finding suitable situations for them. Why not plant, as cottagers do, both the double and single kinds in conspicuous positions close to the walls, in the front or on the sunny side of the dwelling? When in bloom, they would fill the air and the house with perfume. The side and end walls of greenhouses might also be thus occupied; such plants do very well even in the framework, if once established. There is no need to prepare a border for them; a little good soil, just to give the cutting or seedling plant a start, is all that is needed; in this they will speedily establish themselves, needing no further care, and oftentimes showing more satisfaction than if placed among other denizens of the garden.

In conclusion, let me recommend that unoccupied pieces of wall, semi-cultivated and stony, barren pieces of ground be occupied with Wallflowers; the expense and labour will be of the smallest description, and would be more than repaid by the large amount of bloom thus rendered available for cutting, and by the general cheerful appearance of the garden at an early period of the year.

Byfleet.

JOHN CORNHILL.

HYACINTH CULTIVATION IN HOLLAND.

YEARS ago, when Hyacinths were still so high in price that they were only to be had by the rich, there were just a few gardens around Haarlem where these bulbs were grown, and the stock was small at that time. Since the railways and steamers go direct to nearly every part of the world, the nurserymen of Haarlem are producing more stock, and have arranged new nurseries for this valuable plant, so that at present in spring the country around Haarlem for many miles to the north and south is in reality a flower garden. The nurseries generally lie along the dunes (low sand hills), and the soil is almost pure sand, varying in colour from white and yellow to brown and grayish black, which great difference enables the nurserymen to give the Hyacinth every year a different and at the same time a quite fresh soil. During the winter, those places where Hyacinths are to be planted next autumn are trenched 3 ft. and sometimes even 5 ft. deep, in order to bring the soil in which the Hyacinths have grown one year down deep in the ground, and also to get a fresh soil on the surface. In March and April the soil is enriched with cow manure, after which green crops or Potatoes are planted, and it is dug again in autumn about 15 in. deep before it is ready for the Hyacinth.

In the end of August growers begin planting the bulbs, in oblong rectangular beds, about 3½ ft. in width—the depth varying according to the different ages of the Hyacinths, and to the nature of the ground, also to the height the soil lies above the level of the water. By the end of November all the Hyacinths are covered with reed mulch about 1 in. thick, which is taken away in February or March when the frost is over; and if the leaves which are now just coming out of the ground look yellow, they are lightly covered again till they are quite green, when the reed is taken away.

About the 15th of April generally the Hyacinths are in bloom. It is at that time the environs of Haarlem present that splendid sight for which they are renowned. Flowers everywhere, and when there is no wind the air is filled with their rich perfume. When they begin to wither, they are all carefully cut off in order to prevent the bulb from becoming too much exhausted, and are strewn over the land where Potatoes are planted to prevent the sand from being blown away by the winds. This bed of flowers is also of great benefit to the land, as there is some manure in it. Directly after the flowers are cut off, the bulbs begin to grow; the leaves erect themselves and get taller. The weather during May and June decides whether there

will be a good crop or not. For the last two years the Hyacinths have been badly injured during these months by heavy dews and storms, so that it will require at least one good season to bring the stock up right again.

About the last of June the growers begin to take the bulbs out of the ground, and this is the time to multiply them, which is done in two different ways: Coming fresh out of the ground, the bottoms of the oldest and largest bulbs are cut into six or eight equal parts, about the thickness of the height of the bulb; this mode of cultivating is called "crossing." Next year the old bulb is gone (decayed), and on the separated parts of the bottom of the bulb, between the shells, about twenty young ones are grown. The small bulbs got in this way require four years before they are large enough to be sold or to be crossed again.

The other way of cultivating is called, in Dutch, "hollowing," in English, "scooping out," which means, to make a hole. Probably every one knows that a Hyacinth consists of several shells arranged like an Onion, coming together at the bottom, and in the centre of which is the flower. By the end of July, when the weather is fine and dry, this bottom is carefully cut out, so that nothing is left but the shells. The bulbs being severally wounded, are put in the draft or sunshine to dry. After two or three weeks, when the wound is quite dry and hard, a great many small white nobs may be seen near the dry part of the shells; and being planted in the autumn of next year, all these knobs will become very small young Hyacinths, that do not bloom for two or three years, and take six, and sometimes even eight, years to grow to the ordinary size. By this way of cultivating, one bulb produces from 60 to 150 young ones.

Next year the young ones are separated, when crossed, or picked off the old dry shells in the other way of cultivating; planted quite free in autumn, and lifted again in June, and so on for several years, which depends on the sort growing fast or slow, until the bulb is old enough for the market, or to be used for cultivation. By applying these methods of cultivation every year, different stocks are obtained, which are treated according to their age. The Hyacinths, after being all lifted, are buried again in the earth in order to let the roots die off, and to enable the bulb to close itself (ripen). After a fortnight they are taken out again, and dried for an hour or so in the sunshine; then sifted to get the sand away, and brought into the bulb house, where they are laid out on wooden tables in the draught—for the windows of a bulb house are only shut when the weather is damp.

By the end of July or beginning of August, the bulbs are sent out; so everybody may comprehend that it is necessary to send in their orders for flower roots by the beginning of July. New sorts of Hyacinths are got from seed, which takes a very long time, as the grain of seed wants eight, sometimes even ten, years to grow, until the bulb is large enough to produce a good flower; and then the grower possesses only a single bulb. So it may be imagined what a long time it requires, as well as the great cost it incurs, to secure a stock of such novelties.—Case's "Botanical Index."

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Myosotis dissitiflora.—We have a long border now very bright and showy with this Forget-me-not. In other places there are irregular patches, some clustering where self-sown under the shade of pyramidal fruit trees, others in the full sunshine; but I do not believe we have lost a plant from the effects of the long and severe winter which we have had. I like seedlings better than plants raised from cuttings; but I have not made use of cuttings lately, thinking that the plants so raised lacked stamina in comparison with seedlings. For the last two years I have not sown seeds either, as young plants come up in thousands about the borders from self-sown seeds. Seeds of this Forget-me-not produced early ripen and scatter themselves before the later flowers are over, and the young plants from early-sown seeds are in excellent condition for transplanting in October. The seeds of this Forget-me-not are generally sown too late; they should be put in much earlier than those of the Californian annuals; the middle of June in the north of London is none too early. I think it is best to sow in a partially shaded situation, such as on the shady side of a row of espalier or bush fruit trees, although I confess that when seeds are self-sown they seem indifferent as regards aspect.—E. HODDAY.

I have tested in various ways the relative merits of this Forget-me-not raised from seeds and from cuttings, and I cannot perceive the least difference between plants of it raised in both ways. I have raised many hundreds from cuttings, and in examining beds of them at present I find that not one plant in fifty has been killed by the late severe winter. All of them are now in full bloom, but

many of the flowers have not that beautiful azure-blue which is natural to them, but a lilac shade instead, doubtless the result of frosty nights and cold winds. I have this season more plants raised from cuttings than from seeds. I put the cuttings in on July 22 in 5-in. pots, and placed them in a cold frame behind a north wall, so that they might be kept from the sun without using other shading material, and I transplanted them on August 26 6 in. apart on an open border of light soil in the kitchen garden. They were planted out into the flower beds on the 31st of October. The seed I sow about the third week in June, and transplant about the time when the cuttings are ready. If the weather be hot and dry it is absolutely necessary to shade and water the seed, or it will be some weeks before it begins to vegetate.—D. WALKER, *Dunorlan, Tunbridge Wells*.

Flowers in Churchyards.—All of us are familiar with the display made with flowers in many of the cemeteries that adjoin large towns; but in some instances this partakes too much of the character of the bedding-out system, and rather disturbs than assists to create that feeling of repose which should prevail in churchyards. In this respect many old-fashioned churchyards in rural districts are models that might well be copied. I lately saw one situated on undulating ground, which, although but lately restored, had its ancient character carefully preserved. The old crumbling walls were clothed with Wallflower and hardy Ferns, and the massive iron railings of tombs were draped with climbing Roses. The venerable Yews and Walnut trees that had for centuries grown unpruned and undisturbed formed striking monuments of the past, and springing from the turf at their base were large masses of Daffodils, Jonquils, and Tulips, but perhaps the most effective and appropriate of all was a carpet of Forget-me-nots that had self-sown themselves in all directions, and in the partial shelter of this secluded spot had withstood the inclement season far better than those on bare flower beds. I may add that Arabis, Aubrietias, Saxifrages and similar plants also do well and take care of themselves.—J. G.

Primroses.—Much has lately been written about Primroses, and, as spring flowers for embellishing uncultivated places, too much cannot be said in their favour. Here we have quite two dozen different shades of colour, and most effective they look when growing in patches together; but nowhere do they look so well as when clustering around old tree stumps or under the spreading branches of rustic-looking trees. In this way many of them may be seen in the pleasure-grounds here at present, and every one who sees them is perfectly charmed with them. Where they do not exist in such places it would be time and labour well spent to endeavour to establish them.—CAMBERIAN.

Early Violas.—With us none of the yellow Violas named by "A. D." (p. 347) bloom so early and well as Dickson's Golden Bedder, which, in my opinion, is the best for bedding purposes, either in spring or summer. Next to this comes Dickson's Sovereign. Of blue or purple shades, The Tory far outstrips all others in the earliness and profuseness of its blooms, as well as in the richness of its colour. Cliveden Purple is very inferior to Holyrood, which, as a true purple for spring and summer bedding, would be hard to beat. Neither Dean's nor Dickson's lilacina are of much merit.—CAMBERIAN.

Dielytra spectabilis.—The severe frost of April 12th, when the ground was frozen quite hard, laid our beds of *Dielytra* prostrate and apparently dead, but with the return of milder days they gradually assumed an erect position, and are now bursting into full beauty. I have in former years seen this beautiful plant quite killed to the ground with less frost than it has resisted this year; its hardness on this occasion being doubtless owing to the more hardened character of its naturally soft growth, arising from the exceptionally severe character of the season in which its growth was made.—J. GROOM.

Crown Imperials.—Mr. Hobbay (p. 348) seems to think his Crown Imperials worthy of remark, because their stems are "2 ft. high," and "bear six flowers in the whorl." If he is in my neighbourhood and will favour me with a call, I shall be glad to show him specimens of the same plants, both red and yellow—the former 3½ ft. high with eight flowers in the whorl, and several of the latter from 3½ ft. to 4 ft. high with flowers varying in number from eight to thirteen in a whorl.—H. P. DUNSTON.

Gentiana acaulis.—One of the most striking objects in gardens at present is this lovely deep blue Gentian, which is simply unique as regards colour, and, being so very dwarf, it makes a good edging for small beds.—J. G.

Cinerarias.—Blossoms of these belonging to a choice strain have been sent to us by Messrs. F. and A. Smith, of Dulwich. They are bright in colour, and, as regards form and substance, are all that could be desired.

EFFECTS OF FROST IN THE SOUTH-EAST OF IRELAND.

OUR chief losses amongst out-door plants from last winter's frost have been half-hardy plants of kinds which are usually quite hardy here within three miles of the sea. The soil is light, the situation sheltered, and the subsoil gravel. Myrtles have been greatly injured. A plant of sweet-scented Verbena, about 12 ft. high, in a well sheltered corner, shows as yet no sign of life; it had lived out uninjured for many years; a large plant of the common Passion-flower, which has lived out against the house for very many years, is almost killed; it is too soon as yet to know whether either of these will recover. A plant of *Coronilla glauca*, also in a sheltered corner, which had lived out-of-doors for some years, and sometimes blossomed almost the whole winter through, is killed, as is also a plant of *Maurandia Barclayana*, which had lived out-of-doors for two or three years. Of *Tropeolum tuberosum*, which grew luxuriantly amongst *Rhododendrons*, making banks of bloom in sunny positions through the autumn, almost every bulb is apparently killed. Almost every *Dahlia* has also been killed, being, as usual, left in the ground and covered with coal ashes during winter. *Lobelia fulgens*, that most brilliant autumn-bedding plant, usually quite hardy here, is much injured; indeed, we fear that most of it is killed. Beds of double *Daisies* are late in flowering, as many of them were completely lifted out of the ground by the frost. *Anemones* from Pau are also late, but are flowering well, and in good time for contrasting with beds of *Poet's Narcissus*, double *Jonquils*, and *Forget-me-nots*. The latter (*Myosotis dissitiflora*) required to be replanted here and there, as some of the plants were killed. The *Pampas Grass* is also injured.

Amongst plants on rockwork there have been perhaps as few losses as during our ordinary mild, damp winters. To Canadian, North Asiatic, North European, Swiss, and Pyrenean plants, the dry cold of last winter was probably less trying than our usual winters, but plants from warmer countries have stood it well. Of Cape bulbs, such as *Ixias*, *Babianas*, &c., some have already come up, and probably others will do so later. *Crimum capense*, *Iris Pavia*, *Lachenalia quadricolor*, *Schizostylis coccinea*, *Oxalis versicolor* and *Bowiei* are alive; the latter comes up every year, but never blossoms. The German Ivy, also from the Cape, appears to be dead; *Agapanthus umbellatus* and the *Belladonna Lily*, though not on rockwork, have survived.

Of New Zealand and Australian rock plants, *Acæna microphylla*, *Fuchsia procumbens*, *Mazus Pumilio*, *Nertera depressa*, *Polystichum vestitum*, and the New Holland Daisy, are uninjured; but the New Holland Violet, always very delicate here in winter, died; and the New Zealand *Veronica pinguifolia* has been almost killed; a branch or two which had been layered may perhaps survive.

The following South American plants are alive, viz., *Triteleia uniflora*, *Oxalis floribunda*, both white and rose; *Tropeolum speciosum* and *polyphyllum*, *Geum coccineum*, *Calandrinia umbellata* (of this but one plant survives), and *Mimulus cupreus* from Chili; but *Malva campanulata*, also from Chili, appears to be dead.

Of Mexican plants, *Commelina tuberosa* is dead, and but one small piece of *Echeveria secunda* (or *E. secunda glauca*) survived. *Oxalis lasiandra* has not yet come up, but it does not usually appear till late in the season.

Disandra prostrata, from the Canary Islands and Madeira, and *Myosotis azorica*, from the Azores, are alive. *Convolvulus mauritanicus*, from North Africa, died, though usually hardy here. *Convolvulus Cænorum*, from the Levant, is so much injured that its recovery is doubtful, though *Muscari moschatum* and *Tulipa cornuta*, also from the Levant, are uninjured. *Aethionema cordifolium*, from Mount Lebanon, and one or two other Syrian plants, also *Fritillaria persica*, *Tulipa persica*, and *Crucianella stylosa*, from Persia; and *Bambusa Fortunei*, *Dielytra spectabilis*, and *Saxifraga sarmentosa*, from China, are uninjured; but *Plumbago Larpenata*, also from China, planted last autumn, has not yet come up. We have got this flower three different times, planted it with care in autumn, and it has never appeared. Is it thoroughly hardy? [Yes.—Ed.]

Japanese *Primroses*, *Anemones*, *Epimedium macranthum*, *Funkias*, *Sedum spectabile*, *Spiræa palmata*, *Polygonatum japonicum*, and some other Japanese plants are uninjured. This *Polygonatum* we have had for some years, but it has never borne berries, nor do I think it has even bloomed.

Of Himalayan plants, *Androsace lanuginosa* is uninjured; *Polygonum vacciniifolium* is injured, but not killed; *Rhododendron ciliatum* has produced few blossoms, as most of its flower-buds were killed; otherwise, this *Rhododendron* is uninjured. Of many kinds of Himalayan, Japanese, and European *Primulas* the only kinds which we have lost is *scotica*; the hot sun of last summer is, however, as likely as last winter's frost to have killed most of these latter.

Of many kinds of *Campanulas* all are uninjured by the frost, including the Italian *C. Barbellieri* (almost impossible to preserve from slugs), *garganica*, *fragilis*, *hirsuta*, and *isophylla*. Most of our rock plants belonging to Central and Southern Europe have survived, including *Sedum neglectum* from Naples, *Helianthemum formosum* from Portugal, *Veronica lactea* from the Balearic Isles, and others. *Sedum carneum variegatum*, though considered not quite hardy, has survived, as has also *Selaginella denticulata*, though one or two pieces of the latter were killed. *Sarracenia flava*, though a very small plant, lived through the winter. Some of these plants were protected by finger glasses or pieces of glass during the winter, otherwise they were unprotected? One plant of *Edelweiss* was killed; another close beside it remained uninjured. Leaves of the common Ivy are much injured. *Roses* and *Carnations* have not suffered much, if at all.

The only vegetables which were killed here were some small seedlings of *Veitch's Autumn Giant Cauliflower* sown in autumn as an experiment. They survived the December frost, being partly covered with frozen snow. This snow was such a protection that I believe few, if any, of the plants which we lost last winter would have suffered were it not for the January and February frosts alternating with thaws, although the December frost was much the longest and probably the hardest.

Gorey, Ireland.

CHILDREN'S GARDENS.

I CAN fully endorse all Mr. Hobday has said (p. 329) regarding the great benefits which young people derive from a pastime so instructing and ennobling as the culture of flowers. When begun in early years the love of it continues through life, enlarges the powers of observation, and gives more real enjoyment than can be derived from any other source. Thousands go through the world without even knowing the names of even the commonest of plants, and pass them by unobserved; but if their early thoughts had been directed towards them, they would see beauty in all of them, for, as Shakespeare says: "There is not a plant, a leaf, but contains a folio volume; you may read, and read, and still find something new, something to instruct, even in the noisome weed." This is true; and those unacquainted with such subjects lose half the pleasures of life. If we only take a rooted blade of Grass and examine it, we may see how wonderfully well adapted it is for the purpose for which it is intended, and the same holds good in everything else. The structure of plants is a study in itself, and as seedling is the first aim and end of all plants, how marvelously this is provided for in the different kinds. Take the *Fuchsia*, for instance; its flowers are pendulous, and in them and others of similar character the stigma is long, and hangs beneath the anthers in order that the pollen, when ripe, may drop on it. In order, too, to insure its being caught in its descent, a viscid matter is exuded, to which the pollen-grains stick till their allotted functions are performed. In erect flowers this is reversed, and, as if to make sure that there shall be no failing, the blooms of *Primulas* cannot fall without being dragged or slipped over the pistil, on the end of which is the stigma, and in their passage over they must of necessity leave some of their pollen behind, the anthers being seated on and attached to the tube. These are only illustrations of the adaptations of the different organisms, and show how much there is to interest even ordinary observers, and what is missed by those who never look at anything, except in a casual manner. That a love of plants is innate with most of us may be seen by any one who visits our cities and towns, where, even in the most poverty-stricken parts, window-sills are crowded with flower-pots, broken jugs, and all kinds of nondescript earthenware filled with soil, in the hope of coaxing a little verdure out of it. As the so-called mould in these vessels is generally the scrapings and gatherings of streets, these would-be gardeners labour under great difficulties, independent of the soot, smoke, and dust with which they have to contend; but it is something to them to mark how plants grow and seeds germinate, roots penetrate the earth and buds and leaves unfold, each movement being watched with the most lively interest. If in towns so much pleasure is to be derived from a bit of green, how greatly privileged are those in the country who can have their plot of land attached to their residences. I would urge on all so circumstanced to set apart a portion for the youngsters, as there it will be found they will spend their happiest hours, acquire knowledge, and get imbued with a feeling and love for flowers that will never leave them. Who can estimate the amount of good derived from such a start, or gauge in any degree the softening influence which it brings to bear on our rugged nature? That it has a great effect in this direction is, I believe, a fact that no one will venture to controvert.

S. D.

THE INDOOR GARDEN.

THE TRUMPET TREE.

(CECROPIA PELTATA.)

THIS remarkably handsome member of the Bread-fruit family when fully grown reaches a height of quite 50 ft., and its leafy branches stand out nearly at right angles with the stem, thus forming a more or less rounded and spreading head. The most striking peculiarity about this tree is perhaps its hollow trunk, which has transverse partitions inside analogous to those in a Bamboo, only in this case they correspond in number with the scars which represent the positions where the long-stalked leaves once grew. The rough digitate leaves themselves are covered on the under surface with white down, and are commonly eaten by the sloth; the young buds form when cooked a useful vegetable, and the bark when young is tough and may be used for cordage, while the old cortex may be employed in certain cases as an astringent. The wood is exceedingly



Cecropia Peltata.

light when dry, and forms an excellent substitute for cork in the making of floats for fishing nets. The toughness of its bark fibre, and the production of caoutchouc by its milky juice, are properties general throughout the whole Order, and well illustrated in *Castilloa elastica*, which produces excellent rubber, and also by maceration and beating a serviceable bark-cloth of fine texture. Perhaps the most singular use to which the wood of this tree is put is the formation of a peculiar instrument of percussion, used by the Indians of the Rio Maupes, a tributary of the Rio Negro. A section of the trunk 5 in. or 6 in. in diameter and about 4 ft. long is selected; the partitions are removed and the inside is rendered smooth by fire. The lower end of the cylinder is then filled with caoutchouc and leaves beaten down into a solid mass, and a handle is formed by cutting two holes near the upper end. During the holiday fêtes and dances these drums are used by the performers, who, holding them by the handles, beat the lower end on the ground as an accompaniment to the movements of the feet. This instrument is called "Amboobas" or "Em-accompanying illustration represents a young specimen before the bamba," a name by which the tree itself is also popularly known. The branching stage as it pushes its way up into light and air through

Moss or Usnea-draped branches, on which Bromeliads and Ferns have also made themselves at home. The engraving is also suggestive in another way as illustrating a phase of epiphytal plant-life not generally recognised by cultivators at home who will persist in growing Bromeliads in pots and, as a rule, treating them to a dry-as-dust system of culture, notwithstanding that in the South American forests they are in many cases as purely epiphytal as their neighbours the Orchids and the Ferns, and as thoroughly enjoy the heat and moisture which they naturally obtain during the rainy season. Grown in small baskets of fibrous loam, peat or leaf-mould, and living *Sphagnum Moss*, in a genial temperature, suspended near the light, and deluged with water when growing, many Bromeliads would rival even Orchids themselves in diversity of leafage and flower beauty. B.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Japan Primroses.—During the past week the collection of Japan *Primulas* of the *amena* family growing in the seed grounds at Bedford has been in fine condition. Exceeding, as it does, all other *Primroses* in its power to produce variety, the *amena* section possesses an undoubted claim upon popular favour, and although the numbers of seedlings that have been raised have so far been limited, yet some two dozen or so of distinct form have been the result. These forms embrace two distinct divisions in the formation of the flowers, that is, some are smooth and round in petal, whilst others are charmingly fringed and singularly graceful; all, however, are very beautiful. The rich, red-coloured, original *amena* has been eclipsed in depth of hue by the elegant kind called *lacinata*; *lilacina* has increased the depth of its bluish tints in purpures and *Ophelia*; *grandiflora* is quite outdone in size and colour by *maxima*; and *alba* has produced not only finer smooth-edged forms, but some pure white and beautifully laciniated. The variety named *Snowflake*, one of Mr. Allen's seedlings, is a beautiful descendant from this old form. The permanent clumps, growing in 8-in. pots, and throwing up large numbers of flower-stems, are also producing fine blooms, thus showing that to produce the highest kind of beauty in these flowers the plants must not only be well established, but the pots should be full of roots. In comparison with the forms of *amena* the better-known *P. japonica* looks stiff and formal, whilst from seed it simply reproduces itself. The newer kinds may be propagated most freely by roots, although seeding sparingly, but the tendency to produce variety in what little is obtained somewhat compensates for that scarcity. In a few years good clumps of these very hardy and charming *Primroses* will be found in every greenhouse and conservatory.—A. D.

Tropeolum tricolorum as a Window Plant.—There are few more suitable subjects for window culture than this pretty little climbing plant; it succeeds admirably in a cool room from whence frost is excluded. An east aspect suits it best, where it may catch the morning sun, but where it is screened from its noontday glare, for, although this species of *Tropeolum* loves the light, it dislikes hot sunshine. It delights in a cool, equable, and rather moist atmosphere, and flourishes better in a temperature of 55° than when subjected to a stronger heat. It may be trained in various ways, either upon a small balloon-shaped or flat trellis, or, what is still better, and where it assumes its true character, it may be trained up strings on each side of the window, and allowed to festoon and droop down naturally from the upper part of it. The bulbs should be potted in September and plunged in a cold frame, where they need but little water until they have made considerable growth. In November they may be placed where they are to flower, and should be carefully watered, giving only just enough to moisten the soil through. In April, when in full growth, they will require to be more freely supplied, and a little weak lime or soot water will very much increase the vigour of the plant and the size of the blooms.—J. CORNHILL.

Fruiting Passiflora quadrangularis.—"T. P." (p. 365) should allow his plant of this to grow as fast as it will at the extremities of the shoots, and flowers will be produced along their whole length; if these be fertilised with a camel's-hair pencil about noon every day, as they expand and the pollen becomes dry, he will secure an abundant crop. Stopping the shoots does not answer, but where too crowded they should be thinned out, cutting those not wanted away entirely. The plant fruits best when confined to a large pot or tub. Some have asserted that *P. quadrangularis* will not set its fruit unless fertilised with pollen of another variety; but that is a mistake. We grew the plant systematically at one time in a house devoted to it, and fruited it abundantly every season. The year after the plant was struck from a cutting it produced fifty fruit, each being $\frac{1}{2}$ lb. in weight.—J. S. W.

Saxifraga sarmentosa mixed with Ferns.—This Saxifrage always makes an elegant basket plant, but its beauty is much enhanced when mixed with Ferns of like hardness. The other day we noticed several suspended pans containing a Hardy Fern in the centre and the Saxifrage gracefully hanging over the sides, multiplying itself abundantly. The Ferns used were *Cyrtomium falcatum*, *Aspidium angulare*, *Pteris cretica*, &c. These make charming baskets for suspending in windows, especially in towns, as such plants seem quite indifferent to a smoky atmosphere.—W. G.

THE FRUIT GARDEN.

FILLING A VINERY IN ONE SEASON.

THERE is nothing new in filling a Vinery with healthy and vigorous rods the first season from eyes, but filling a Vinery the first year, and at pruning time cutting the rods off at the tops of the rafters, is what I have never seen recommended in any periodical. It is more than twenty years ago since I planted a Vinery in the month of June with young Vines, principally Black Hamburgs, in a border wholly outside. It consisted chiefly of loam, road grit, and, I suppose, some leaf soil, as we were not so frightened for fungus in those days as we are now. After the border was made it was allowed to settle. Nor ten days, more or less, previous to the Vines being planted. Nor was it made to its full extent; on the contrary, only a width of 4 ft. or 5 ft. was made along the front of the Vinery. The Vines being home-grown were strong and about 6 ft. long, and in planting good wide holes were made in the border, and a few bricks were taken out beneath the wall plating in order to enable us to introduce the Vines carefully into the house. All being planted, the Vines were loosely attached to the wires in order to prevent any hanging taking place between root and top. When the Vines were planted their balls were not broken, but any roots that could be got at were stretched out and laid in the fresh soil. At this time the thermometer in the border stood, if my memory serves me, at 82°, a suitable temperature for Vine planting; indeed, it could not be otherwise, compounded, as the soil was, for the border during the warm season. On bright days the lower part of the house was slightly shaded until the foliage faced about to the light, and the inside paths, walls, &c., were kept moist through syringing with tepid water. In a short time the Vines began to grow again, apparently suffering but little from being planted in their new situations, and, with attention to airing and watering, they very soon were at the top of the house, and exhibited an amount of vigour beyond my highest expectations; and to stop the shoots in their progress appeared to me to be nothing more or less than cruelty to vegetation. I considered, too, that the more top I could get the roots would be running through the border in proportion, and upon examination I was not disappointed. Instead of pinching the shoots when they reached the top of the rafters, I simply turned the point of each shoot down the wires again to the wall plate, where most of them stopped, although some of the more vigorous ones were allowed to run in a horizontal position across the house. The bending at the top seemed to retard their growth to a certain extent, as the Vines up to this point ripened and thickened well, and by the end of the season I had an experimental house of well-ripened Vine rods, quite to my satisfaction, upon Mr. Simpson's system (p. 324). I may state that fires were confined until the end of November. In the beginning of December, at pruning time, the question arose in my mind as to what distance back I should cut the rods. As they were strong and had plenty of plump eyes, I decided that it would be worse than barbarous to cut them farther back than the top of the house; so, upon the "new plan," I filled a Vinery with strong-bearing wood the first season, independently of taking a good crop of Grapes out of the said house previous to replanting it; and neither was I disappointed with the crop the following season. The above is my experience of the so-called new plan.

During the same autumn I visited several of the best gardens I knew of, such as Trentham, Chatsworth, Enville, and others. At Enville new Vineries had been planted the previous spring, and they had made some very good wood, which was ripening well. The late Mr. Eaton showed me the hothouses himself, and I found him very communicative. In every Vinery we went through the rods were all stopped about half-way up the rafters, and apparently that had been done more than once, or from their strength they would have filled the house. In directing Mr. Eaton's attention to the matter he informed me that stopping was a system that he had long adopted in the case of young Vines. I therefore began to regret that I had allowed my Vines to stray so far from home, but still, so far, the results were satisfactory. At Chatsworth I saw a little of the new plan of fruiting Vines the whole length of their rods, but not exactly

the same as that practised by Mr. Simpson. Well-grown pot Vines were merely planted out in a narrow border while green, about 15 in. apart, and, from what I could observe, the wood was ripening well. I was informed that these Vines were intended to be fruited their whole length, which would be about 15 ft. the following season. At Trentham I was shown both the hothouses and grounds by the late Mr. Fleming, who drew my attention to everything that was new, and particularly to some young Vines which he had planted that spring, and certainly they were growing at a fine rate, but I could not say they were stronger than those which I had left at home, and, like my own, they had got to the top of the Vinery and were turned down again, while three of the leaders were progressing horizontally from opposite corners of the house, and getting on fast for 50 ft. in length. Venturing to allude to the stopping and extension system, I mentioned what I had seen at Enville in regard to stopping, and likewise what I had done myself, and, in comparing notes, Mr. Fleming's opinion was that the greater the amount of top the farther might the roots extend. Cutting back was not discussed, but, judging from appearances, the Vines were strong enough to be treated on Mr. Simpson's plan.

When I came to Workshop Manor I found the Vineries not quite satisfactory, but between pits and borders I hoped to produce sufficient Grapes till I had got young permanent Vines established, and I was not disappointed. My longest rod the first season was double the length required, viz., 18 ft. or 20 ft., and abundance of fruit was produced so long as I was at Workshop Manor, and, for anything I know to the contrary, the Vines are bearing well still, which speaks volumes in favour of the so-called "new plan." J. MILLER.

Clumber.

VENTILATION OF COOL FRUIT HOUSES.

THERE is now a good deal of fruit grown in villa and other garden^s in glasshouses either not supplied with artificial heat, or where only just sufficient warmth is applied to keep out the frost. Such houses are usually expected to serve a double purpose—to preserve bedding plants in winter, and to produce a supply of Grapes and other fruits in summer and autumn, and sometimes also, Strawberries in spring. This kind of fruit growing is extending, and will probably, under the influence of increasing wealth and a growing taste for gardening, continue to extend. Now it need hardly be said that the planting of fruit trees under a glass roof—though a thing to be desired from every point of view—adds to the responsibilities of those in charge, horticulturally speaking, of the establishment, inasmuch as it increases the number of living things, to whose wants daily attention must be paid. In the whole range of cultural operations under glass there are none more important than the management of the ventilation. Plants must have air, and yet air-giving is often performed in the smaller class of gardens in a very haphazard manner. One person with whom I am acquainted easily gets over the difficulty by setting the ventilators of his greenhouse Vinery open and keeping them constantly so from the end of May till the close of the season, and then complains of his Grapes being small in bunch and berry, and the crop, more or less, injured by mildew. Another keeps his orchard house closed till nearly midday, and then he cannot understand why the leaves of his Peach trees lose colour and fall off prematurely, often accompanied or preceded by the fruit, the latter being generally small and flavourless; and yet, if one looks at the matter from a common sense point of view, it ought not to be difficult to so ventilate a house containing fruit trees as to obtain a fairly satisfactory result, with the certainty that when sufficient thought has been given to the subject the work will become lighter and also be better done; hesitation or doubt as to the right thing to do will be removed by experience. In the ventilation of our dwellings we admit air on cold days in very small quantities, if at all, and we avoid cold draughts; but on warm, balmy days we set the windows open. Well, the same principle carried out in the orchard house or cool Vinery will give fair results, but not the best that are capable of being obtained, as these will easily be secured when some experience has been gained, and we begin to understand that if we carefully utilise the sunshine, we can force, so to speak, increased size into our Grapes and Peaches without spending a shilling on fuel.

If the best possible results are to be obtained with fruit in cool houses, the ventilation and the supply of moisture in the atmosphere and to the roots, if inside, must be carefully attended to. There are days and nights, too, in summer when, if the roof could be lifted entirely off, the trees would be benefited by the exposure. On the other hand, there are days often as late as June when, if air be freely given, the trees may be chilled, checked, and almost ruined. During the early stages, when the growth is young and tender, front air should be given sparingly, if at all; cold draughts are often injurious. The presence of mildew, and all other ailments, may often be traced to a cold current of air rushing through the house early in the season. I have often thought some change might be made in

the arrangement of the ventilation of cool houses. My impression is that ventilators inserted close to the ground would be an advantage, so that the air could percolate through air bricks or some such contrivance that could easily be stopped up during very cold weather. With some arrangement of this kind there would be no necessity for any other night ventilation, and no cold draught would be created; besides, the fresh air coming in close to the ground would rise gradually as its temperature increased. I suppose no glass roof that ever was fixed was altogether air-tight, and the circulation would go on so gradually and gently that no violent disturbance of the atmosphere could take place. If air could be admitted in the way just suggested, there would be no necessity to open the back ventilators till the sun had risen and had begun to act on the glass roof so as to raise the thermometer, then, of course, the general roof ventilation would come into operation. The inserting of ground-line ventilators is becoming general in buildings where valuable animals are kept, and I believe that if the same principle were adopted in hothouses and greenhouses it would be an advantage, and would meet a want that is much felt. It should, of course, be well under control.

In the ventilation of the class of house to which I am referring in winter there could be no difficulty, as the fruit trees would then be leafless and at rest, and the more ventilation given the better consistently with the safety of the bedding or other plants that the house might contain. But when the buds burst in spring the ventilation should be reduced to a system, if the greatest possible benefit is to be obtained from the glass roof, not only as regards its protective power, but also for the forcing, or rather stimulating, effect which the climate under it will give if the ventilation be rightly managed. Unless we keep in view this latter quality we shall fail to realise the full benefits which a glass roof is capable of affording. By closing early on warm days, shutting in, so to speak, the sunshine, at the same time syringing the trees or damping the borders to create a moist atmosphere, and give an impetus to both the frail and the young growth, that will tell a tale not only upon this year's crops, but on others that follow. Early closing and early opening should form the keystone of all systems of ventilation.

Where there are no ventilators close to the ground, then the early morning ventilation must be given at the highest point of the roof. On a bright morning when not freezing, a little air should be admitted as early as six o'clock, the quantity being of course regulated according to the outside temperature. In most instances a very small aperture, at intervals of 6 ft. along the roof, will suffice, but for very early ventilation I much prefer, as I have said, the cool air entering at the ground line, where it can be carried out. With air in circulation, and admitted fresh in small quantities from the outside, the thermometer may be permitted to rise till it approaches 70°. More air must then be given, until the top ventilators are open to their full extent. If sufficient provision has been made to give roof ventilation, there will be no necessity to open the front ventilators, except when the air is genial and warm; but if during the forenoon the thermometer hanging in the house rises above 80°, with full top air on them, a little front air should be given, to be taken off again when the thermometer falls below 80°. In the afternoon the air should be reduced in like manner, until the house is closed at half-past three or four o'clock, according to the season of the year. These directions only refer to bright sunny days. If after closing on a bright day the thermometer runs up to 90°; or a few degrees more, with a declining sun, no harm will be done. Later in the season when the fruit is approaching maturity, a full and free circulation should be given both day and night, in order to give colour and flavour to the fruit; less will be required at night than during the day; still, the circulation should be maintained. E. HOBDAY.

ARTIFICIAL HEAT FOR VINE BORDERS.

As bearing out what Mr. Baines has asserted respecting the inutility of fermenting material for covering early Vine borders, and as proof, that in such an inclement season as the past, with its almost continuous frost and heavy falls of snow and wet, good Grapes may be grown without it, I send you a couple of leaves picked from Vines planted nearly twenty years ago, and which have been forced ever since and Grapes cut from them in June. Not only have these had no hot manure to stimulate the roots, a matter considered of so much importance by some, but they have not even been protected by a coating of straw and dry leaves or sheltered in any way beyond what is afforded by a dressing of rotten manure applied in autumn, and which in no part of the border is more than 2 in. thick. I think it will be admitted that the winter has been as bad as it could possibly be, owing to the absence of sunshine, and yet, as will be seen, the foliage neither lacks size nor texture, the latter quality being in some measure attributable to the low night temperature maintained, and the dry state of the atmosphere kept up at the same time, as well as

during dull days, when we were always careful to have a little air on to let out moisture caused by watering bedding plants with which the house had to be filled, as they were potted in order to give them a start. I am of opinion that more early forced Vines are injured and weakened by having the air too damp and confined than by any treatment to which the borders are subjected, for if the leaves be made thin and flimsy, they become a prey to red spider, and lack the power of enduring bright sunshine or dry parching heat during the summer. The evil of course does not rest here, as the roots are affected in an equal degree, and the strength and energy of the Vines dwindle year after year till they are unable to bear a crop that is at all remunerative or satisfactory. So convinced am I of the uselessness of applying heat to Vine borders that I have long since abandoned the practice, and the result so far has been that I have grown better Grapes than I was ever able to do with the soil weighted and sealed over with a huge mass of steaming manure. If the borders are properly drained and frost kept out by the natural means of some non-conducting material, such as fresh fallen leaves or litter, the roots will remain in a much healthier state than they will when unduly excited. This has been my experience, and if others who still go on in the old track will get out of the rut, I do not think it at all likely they will ever get into it again.—S. D. [The leaves in question measured 14 in. one way and 12 in. the other.]

GOLDEN CHAMPION GRAPE AT HENBURY HILL.

ALLOW me to tell "J. S. W." (p. 350) that on the 29th ult. Mr. Shore, the gardener at this place wrote to me saying that the berries were as large as those of full grown Hamburghs and stoning; and also that in the same house a Madresfield Court Vine, with its roots now entirely inside, though they will ultimately be allowed to run out-of-doors, is not nearly so forward as the Golden Champion, the berries not being one quarter the size. As is obvious, the inside treatment of the two has been identical, but one has its roots inside, while those of the other are out-of-doors, and the latter, the Champion, being the most forward is conclusive evidence that the roots, being outside, have neither retarded the growth nor been inimical to it in any way. If Vines started at the end of January without even protecting material on the border are too late to afford evidence as to the uselessness of hot material on the border, why does "J. S. W." use it on Vines which he admits started a month later? He fails to take notice of the cases which I have adduced of Grapes being ripe by the first of the present month without a particle of warm matter having been near their roots. With these remarks the subject, so far as I am concerned, shall close for the present. There has been, at all events, incontrovertible proof of the uselessness and very often injurious effects resulting from the use of fermenting matter on borders. "J. S. W." forgets that the roots of established Vines, such as the greater portion of those forced, have, in most cases, their best feeding active fibres far beyond the limits of the warm material-covered border, and consequently are thus beyond its influence for either good or evil. The fallacy into which "J. S. W." and others have fallen rests on the supposition that plants collectively should make simultaneous root and shoot growth; but that is a mistake. With a great number of cultivated plants, the Vine included, it is not natural for root extension to begin until a large amount of top growth has been made; and, when fermenting material is laid on the border sufficient to warm it to the extent which they deem necessary, root growth commences sooner than is either natural or well for the Vines. T. BAINES.

STRAWBERRIES ROOTING THROUGH POTS.

ALLOW me to state, in answer to Mr. Cornhill (p. 350), that allowing the plants to root through the pots previous to flowering does not cause an undue luxuriance of foliage with me, and the example which I sent to THE GARDEN Office showed this. Mr. Cornhill's statements afford no means of estimating the productiveness of his plants, and I am surprised to learn from him that market growers are obliged to confine themselves to delicate sorts if they wish to obtain good prices for their produce, and that in this respect Vicomtesse Héricart de Thury "is of but little use to market growers." Only the other week "C. W. S." informed us that Garibaldi, which is the same, was a favourite sort with a noted London market Strawberry grower, and that two other very large growers grew Sir Charles Napier exclusively, "because its fine appearance makes it a good market fruit!" but as it is not known it is an inferior kind otherwise. "Briskly acid flavour" is all the praise bestowed upon it by pomological authorities. I believe that it is more extensively grown for market purposes than any others. Your correspondent must therefore be under a delusion on this head. My experience is that private growers cultivate fruit of the first quality, and that market gardeners only second-rate, though it appears that Mr. Cornhill considers the contrary to be the case. I have often tested what was considered

fine samples of Covent Garden Strawberries in April, and I will say that more insipid fruit I never tasted, and I have often been told by those who know, that market fruit cannot be compared with home-grown fruit. The reason is obvious. Market gardeners do not and cannot take the same pains to finish their fruit that private growers take; it would not pay them to do so; hence they hurry their fruit into market as soon as it is red, whether ripe or not. I saw last year, in a noted fruiterer's window, about a dozen baskets of forced Strawberries from a London market grower, amongst which not a single berry in the whole lot appeared to be fit to gather. I certainly have never found a market grower who confined himself to varieties that were "distinguished by a delicate constitution," but they have a profound regard for the "fill-basket" kinds.

J. S. W.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Grapes from Vines Raised from Eyes the Same Year.—Allow me to assure "J. S. W." (p. 349) that I did not doubt the accuracy of his first statement under this head, but only questioned the possibility of getting anything worth calling a crop under one year from eyes. Although "J. S. W." is evidently well acquainted with the details of the system, and has experimented on planted out canes, yet he has not carried the system through to the end; therefore, he saw, I fear, little to gain by it, and the chance of a good deal to lose, as pot Vines, whether home-grown or bought from the trade, are expensive articles with which to experiment. If Mr. Henderson, of Thoresby, would kindly tell us how his Vines finished their crop, it would doubtless interest many beside myself who are anxious to get good crops in the shortest time. Although "J. S. W." says that the Vines breaking their permanent buds, owing to their leaves having been cut off, "disposes of my theory that they require a season of rest," yet that in no way alters the character or constitution of the Vine, for if checked in full growth it must needs expend its force somewhere, and naturally breaks at the eyes destined for next year's crop in the ordinary course. As, however, late Grapes and the mode of preserving them long in good condition has nearly superseded very early forcing, I do not think that many will follow so unnatural a system as that just alluded to, whether it be new or old, but will be content with treating the Vine as an ordinary deciduous subject that requires a decided season of rest.—J. GROOM.

Fruit and Garden Shelters.—Some time ago I recommended the planting of screens of Fir and similar evergreen trees for the protection of fruit gardens from the fierce sweeping east and north-east winds. How much during the last few days have such screens been wanted where Nature has made no provision for shelter! Even, perhaps, worse than the sharp white frosts of night have been the biting blasts sweeping through fruit trees and bushes with destructive results. Every spring, as regularly as the trees bear blossom, come east winds which destroy the early flowers wholesale. If some measures be not taken in time to render our gardens and orchards thus protected, fruit growing will either become an impossibility, or will be so surrounded with losses as to render it valueless. There is already too much reason to fear that generally the Gooseberry and Currant crops are much injured. Growers state that this is so, and should such prove to be generally the case, it will not only result in a heavy loss to the growers, but also to the nation. All Pears and Apples so far are yet uninjured; Plums and Cherries have been largely in bloom during the prevalence of the keen winds and frosts. What the warm sunshine during the daytime has done to promote fertilisation, the winds and frosts at night have largely undone, and in the face of such facts it is difficult to look for an abundance of the latter fruits. We must begin to realise that fruit culture in this country is no longer an easy proceeding, and that to check the damage wrought by the cold springs special shelter must be given. No fruit garden should now be planted that has not its protection in the shape of a screen of Fir trees.—A. D.

Exposing Strawberries to the Sun.—Those who have good dishes of ripe Strawberries will do well to be careful as regards trying Mr. Cowburn's plan (p. 350) of exposing them to the sun. The other morning we gathered a dish from some plants before taking them out of a Pine-house, and, as they were not wanted for dinner until night, they stood all day in a basket on a shelf exposed to the sun. At night many of them looked as if they had travelled 200 miles, and their half-fermented-like flavour was anything but agreeable, or an improvement on their taste when newly gathered.—CAMBRIAN.

Fruit Prospects in Kent.—If lateness in blooming be a desideratum, we ought to get good crops of fruit this year. With us Apples promise to bloom abundantly, but it will not be fully

expanded before quite the end of May, and late flowering kinds will open in June. Pear blossom is partial; that of Cherries generally abundant; but Plum and Damson bloom is very partial, many orchards being very thin. I may add that both on Filberts and Cob Nuts male and female blossoms are abundant, and, as they always flower when frosts are prevalent, they may withstand the extremely low temperature which they are still experiencing better than more tender fruits. Bush fruits at present promise well.—J. GROOM, *Linton Park.*

NOTES OF THE WEEK.

Camellias in the Isle of Wight.—Notwithstanding the severe winter and spring, the Camellias here are full of flowers, many of which are injured by the weather, but the shoots being laden with buds in all stages good flowers may always be found. A group in Sir William Hutt's garden shows the most freely blooming and showy plants of Camellias we have ever seen, either under glass or out of doors. They are even more vigorous than Camellias often seen about Rome. In Her Majesty's gardens at Osborne, the Camellias are also laden with flowers—and fine flowers—to a degree that is never seen under glass. Hereabouts, at least, the Camellia is not only a hardy evergreen, but the handsomest of all flowering shrubs.

Orchids at the Royal Exotic Nursery, Chelsea.—Amongst those which we noticed a few days ago in flower here was *Cypripedium Lawrenceanum*, which was finely in flower; it somewhat resembles *C. barbatum*, but it is much superior to that kind both in size and colour. The quaint-looking *Masdevallia Chimara*, with flowers triangular in outline, and measuring fully 8 in. from tip to tip of the attenuated segments, is one of the most interesting of the family. The rare *Colax jugosus* is very beautiful; its blossoms have the three outer divisions pure white, and the inner heavily blotched with deep, reddish-purple and a rich purple lip. As a rule, the majority of the *Epidendrums* are not showy, but the flowers of the new *E. Wallisi* exhibit a very pleasing blending of tints, the outer parts being yellow with here and there a dark spot, and the large lip white pencilled with purplish-black streaks, and the edges beautifully fringed. *Brassavola Digbyana* is a kind not often met with in blossom. Its flowers are white, 3 in. across, and they have a remarkably large lip, which is elegantly fringed at the edges. The best of the *Dendrobiums* now in flower are *D. Farmeri*, *thrysiflorum*, *crassinode*, *chrysotoxum*, and the handsome *D. infundibulum*, with its large ivory-white blossoms and orange-coloured lip. The gorgeous *Cattleya Mendellii* is represented by some very fine forms, differing chiefly from each other in the richness of the tints. *Oncidium concolor* alone makes a very effective display on account of its free-flowering tendency and the clear rich yellow of the blossoms, which render it scarcely inferior to the superb *O. Marshallianum*, of which there is a fine example in flower. Other rarities, such as the curious little *Phalenopsis Parishii* and *Sarcophilus Fitzgeraldi*, are also in blossom.—W. G.

Rock Plants at Oakfield.—A rockery under glass is seldom met with, but the advantage of having such a house is admirably exemplified in Mr. Joad's garden at Wimbledon. There may now be seen the choicest gems of the mountain tops luxuriating in native-like vigour, and many of them in flower. Amongst these we noticed the Siberian Saxifrage (*S. sibirica*), a handsome species which forms a tuft of kidney-shaped, toothed leaves, and bears numerous pure white blossoms $\frac{1}{2}$ in. across. Associated with this was *Ranunculus Bertoloni*, a rare South European Crowfoot with roundish leaves and snowy white flowers about the size of a shilling. Various kinds of *Androsace* were also finely in flower, notably the charming little *A. carneae* and *chamaejasme*. The creeping *Epigaea* (*E. repens*) here seems quite at home, peeping from beneath the overhanging ledge of a massive boulder, and producing a profusion of its delicate bluish-tinted blossoms. Another rare Saxifrage which we noticed was *S. irrigua*, a distinct species belonging to the mossy section. It has finely-divided foliage and large white flowers borne on stalks 6 in. high. These are only a few of the many interesting plants to be seen in this delightful house, in which are developed every day new objects of beauty.

Double Primroses.—We have received from Miss Owen, of Knockmullen, Gorey, Ireland, specimens of double Primroses, all extremely handsome and varied in colour. Miss Owen states that she has two distinct kinds of purple, also white, yellow, rose, lilac, and crimson. One of the crimson grows like a Polyanthus, and this form seems constant; along with these also came two double Polyanthus, a dark and a light brown one, and in the same garden there is stated to be another double Primrose, white, slightly tinted with very pale mauve.

Haberlea rhodopensis.—This charming little plant is now flowering probably for the first time in this country in Mr. Joad's collection at Wimbledon. It bears considerable resemblance to a small *Gloxinia*, and belongs to the same family. It forms dense tufts composed of numerous small rosettes of leaves, which have the appearance of those of the Pyrenean *Ranondia* (*R. pyrenaica*). The blossoms are produced on slender stalks, from 2 in. to 3 in. in length, and are about 1 in. long, tubular, with a spreading mouth. The colour is a delicate violet-purple, with a faint dash of yellow inside, and copiously spotted with purple. This interesting little gem comes to us from the Balkan Mountains, where it is found growing amongst Moss, &c., on damp, shady, steep declivities at considerable elevations. Though presumably quite hardy, it is advisable, on account of its rarity, to keep it under frame culture.—W. G.

Cinerarias at Reddees.—The excellent displays of this deservedly popular flower made at the spring exhibitions by Mr. James are ample proof of his skill both as aculturist and hybridist, and a visit to Reddees equally illustrates the fact. In point of size, form, and variety of colour, Mr. James' strain has apparently reached perfection. In such an extensive collection as is grown here, of course some colours predominate, and this is the violet series, but even in these the tints are diversified by the various hues of the central florets. Associated with these, too, is a promising collection of herbaceous *Calceolarias*, which will shortly be a sight worth seeing. *Cyclamens*, which have made such grand displays in spring, are now on the wane, and their place is being taken by the *Pelargoniums*, for which this establishment has so long been noted.—W. G.

Hardy Orchids.—Several of these are now flowering beautifully in Mr. Joad's garden. They are growing in a house wholly devoted to half-hardy plants, and which evidently suits their requirements admirably. Those now in flower comprise the yellow-flowered *Ophrys lutea*, a South European kind, which has blossoms of a very curious form. *Orchis provincialis* is another yellowish-flowered sort, which has larger blossoms. The Spider Orchis (*Ophrys aranifera*), one of the most variable of Orchids as regards the colour and size of its blossoms, is here represented by numerous forms; also the apparently nearly-allyed *O. arachnites*. *Orchis longibracteata*, one of the largest-flowered Orchises, has its blossoms, which are of a pale violet-purple tint, produced in long dense spikes. Last, but not least, we noticed the very rare Northern *Calypso* (*C. borealis*), a North American species with rather small flowers, possessing a remarkably curious structure somewhat resembling a bull's head.—W.

Greenhouse Rhododendrons.—The following kinds of tender Rhododendrons are now finely in flower in Messrs. Veitch's nursery, Chelsea, viz. *R. Countess of Haddington*, a kind with large funnel-shaped flowers, varying in colour from a delicate blush to a deep rose tint; *R. Sesterianum*, with large pure white blossoms, having crisped edges; *Princess Alice*, with white flowers, which are more shallow than those of the others; and *R. fragrantissimum*, also a large white-flowered kind, and, like the preceding, exhaling a delicious perfume. All these, and many others of a similar type, make capital showy plants in greenhouses in spring, and should be more extensively grown than they now are.—W.

Clematises at Chelsea.—One of the conservatories in Messrs. Veitch's nursery is now gay with well-flowered plants of Clematis, chiefly those of the patens type. They are trained on balloon-shaped trellises, which are covered with flowers of various hues, and exceedingly effective when seen mixed with other spring-flowering plants. As they are so easily managed under pot culture, they certainly deserve to be more extensively grown than they are for conservatory decoration.—W. G.

Spirea Thunbergi.—This is one of the neatest spring flowering shrubs with which we are acquainted. It rarely exceeds 2 ft. in height, and is for a considerable time literally covered with small white blossoms, which, seen *en masse*, are remarkably attractive. Though perfectly hardy, it is an excellent plant for conservatory decoration, as it succeeds admirably in pots.—G.

The Cluster-headed Polemonium (*P. confertum*).—This singularly beautiful species, of which we gave a coloured illustration (Vol. XIV., plate 48), is now finely in flower in the open air at Mr. Parker's nursery at Tooting. Though it is reputed to be difficult to manage, it seems to thrive admirably in a thoroughly drained position, and where excessive moisture during winter is prevented as much as possible.

Mesospindium sanguineum.—We saw a fine display of this beautiful Orchid a day or two ago in Mr. Parker's nursery. The Grass-like foliage and the gracefully-arching spikes of deep rosy-red blossoms were very effective. Associated with these was a good batch of the rose-coloured *Odontoglossum* (*O. roseum*) in fine flowering condition, which was also very attractive.

Rose Medals.—The Société Centrale d'Horticulture of France, dealing with the special gift of Madame Laffay, widow of the eminent Rosarian, to be distributed to Rose growers who had raised the best varieties of Roses, has decided that a gold medal should be given to F. Lacharme, a gold medal to Guillot fils, and one silver-gilt to Madame Ducher—all three of Lyons.

Pulmonaria dahurica.—A fine flowering example of this rare little Liverwort may now be seen in Mr. Parker's nursery. It grows about 6 in. high, is spreading in habit, and has small lance-shaped leaves and dense terminal clusters of deep blue blossoms. It apparently requires a little protection during winter in order to bring it to perfection.

Saxifraga aretioides primulina.—When this charming variety is seen by the side of the type the distinction is very marked, as the blossoms, instead of being of an orange tint, are of a clear primrose yellow. It also seems to be much dwarfer in growth and more dense.—W.

Muscari pallens.—This is an elegant little kind not often met with. At first sight it reminds one of the pallid form of *M. botryoides*, but it is readily distinguished by the flowers not being globose, as in the latter, though the colour is much the same. It is now flowering freely in Mr. Barr's grounds at Tooting.

Masdevallia Shuttleworthi.—An unique specimen of this very singular Orchid is now in flower in Mr. Bull's nursery at Chelsea. It is by no means so showy as many of its congeners, as the marking of its flowers is somewhat of a dull hue, but on account of its extreme rarity it is particularly noteworthy.—W. G.

Tulipa Greigi.—Some of the best flowering examples of this fine Tulip which we have yet seen are now in Mr. Joad's garden at Oakfield, where, in company with other choice hardy bulbous plants, it thrives admirably.—W. G.

NOTES FROM KEW.

Hardy Plants.—The various representatives of the showy Borage family are particularly noteworthy, the rarest amongst them being the beautiful *Echium-like* *Arnebia* (*A. echinoides*), with clusters of bright yellow blossoms $\frac{1}{2}$ in. across with five spots at the base of the divisions of the corolla, which are black, gradually fading to a pale brown tint. It is perfectly hardy, and succeeds admirably when planted on well-drained rockwork in a partially shaded position. Boissier's *Kernera* (*Kernera Boissieri*) is a very neat little novelty for the rockery. It grows about 3 in. high, tufted in habit, and at this season forms a perfect compact mass of small white blossoms, which remain a considerable time in beauty. It is a member of the Crucifer family, and of perennial duration, and, as it produces seeds very freely, we hope to see it more widely circulated. The North American *Trillium* are always worth referring to, as they comprise some of the most ornamental of bog-loving plants. The large-flowered kind (*T. grandiflorum*) is a superb species, and should be in every collection; the rich green of its trifoliate leaves and the chaste beauty of the large pure white flowers render it highly attractive. It abounds in various parts of North America, growing in shaded, moist localities. Another handsome North American plant is the large-flowered *Uvularia* (*U. grandiflora*) belonging to the Lily family. It grows about 15 in. high, with stems about the size of a quill, the upper part of which gracefully droops, bearing the yellow blossoms, which are 2 in. long, with narrow segments. As a choice border flower it ranks high and deserves to be better known. *Corydalis nobilis* is amongst the best of its family; the dense clusters of yellow flowers, rising from the finely-cut glaucous foliage, are very attractive. *C. bracteata*, like the preceding, is a native of Siberia, and differs from the last by the unusually large size of the floral leaves; the blossoms are about the same size and colour. Amongst the bulbous plants a charming variety of the Rush-leaved Daffodil, named *Narcissus juncifolius* var. *apodanthus*, is a very distinct kind, and may at a glance be distinguished from the type by the larger and richer coloured blossoms, and the cup being much shallower and lobed. It is a native of Spain, and as yet seems to be somewhat rare in collections. The Crocus-flowered *Romulea* (*R. crociflorus*) is a very handsome Irid, which, when its flowers are fully expanded, strikingly resembles those of the old *Crocus biflorus*, as they are about the same size, and possess the same lemon tint inside the perianth.

Greenhouse Plants.—*Boronia elatior* is showiest and most graceful of Australian hard-wooded plants, and makes a very fitting companion to its deliciously-scented congener, *B. megastigma*. It grows into a compact bush, with numerous slender branches and small leaves interspersed with a profusion of rosy-pink globular flowers, which are also sweet scented. Some of the original species of *Pelar-*

PLATE CLXXIX.

TYDÆA ROBERT LE DIABLE.

Drawn by CONSTANCE PIERREPONT.

goniums, which chiefly inhabit the Cape of Good Hope, are extremely beautiful and certainly merit more extended culture. P. Schottii perhaps possesses the richest coloured flowers of any; they are deep magenta with a conspicuous black-purple blotch on each petal; the foliage, too, is ornamental, as it grows to a large size when liberally treated. A remarkable Aroid is *Arisæma præcox*, which has large, thrice-divided leaves and mottled stalks. The flowers are very curious, consisting of a membranous spathe of peculiar form, elegantly striped with green and dark brown, enclosing a cream-coloured club-shaped organ. *Pentlandia miniata* is a very desirable Amaryllid with a stout flower-stalk rising from an oval-shaped bulb, and bearing several pendulous, tubular blossoms 1½ in. long and of a bright red colour. The well-known *Scutellaria Mociniana*, which is usually met with in stoves, is made free use of in the greenhouse, and a capital plant it makes for the purpose; the bright scarlet clusters of flowers have a telling effect when mixed with more delicate-tinted kinds. The plants are grown in heat and gradually inured to a lower temperature.

Stove Plants.—The *Cotinus*-leaved Dais (*D. cotinifolium*) is a rare and interesting African shrub, belonging to the *Daphne* family; the leaves are rather small and oval, and the flowers are produced in dense clusters, similar to those of *Pinckel*, and are of a pleasing violet-purple tint. *Tabernaemontana coronaria* is a pretty shrub, of neat habit, studded with numerous Periwinkle-like blossoms, which are pure white with a golden eye. The double-flowered form of this species much resembles the ordinary *Gardenia*, and is a capital substitute, though it is not so strongly scented. The roof of the old Lily House is now extremely gay with that lovely climbing Brazilian plant, *Bougainvillea speciosa*. This kind differs from the better known *B. glabra* by its larger floral leaves and by the hairy leaves. For planting in houses where room can be spared this superb plant cannot be too highly recommended. Among the Bromeliads the variety *pauifolia* of *Billbergia Wetherilli* is now very attractive, the deep carmine bracts and the indigo-blue flowers, borne in gracefully drooping clusters, need only to be seen to be appreciated. Another handsome member of the same family, and one that retains its beauty for such a considerable period, is *Æchmea glomerata*, a Brazilian kind, with scarlet bracts enclosing rich purple flowers, collected into very dense clusters at intervals along the flower-stems, which rise 18 in. high.

Orchids.—The Long-tailed Lady's Slipper (*Cypripedium caudatum*) is probably the most curious of this vast family. The flowers are arranged in a racemose manner on a long flower-stem, and consists of a pouch-like lip as large as a pigeon's egg of a greenish-purple hue; the two side petals are developed to an enormous length, in some measuring nearly 2 ft., and twisted more or less in a spiral manner. The variety *splendens* is an improvement on the original, as the flowers are larger and the tints better defined; they are, as indeed are all the species of this section of the genus, natives of the warmer regions of South America. *C. Hookeri* is a desirable Bornean species with mottled foliage and blossoms, with the lip greenish, and the tips of the side petals of a rich violet-purple. *Dendrobium Jenkinsi* is a pretty little kind for growing on blocks, to which it readily attaches itself, and for several weeks at this season is highly attractive by the numerous rich yellow flowers which spring from the small bulbs. Much resembling it in point of size and colour of the flowers is the old *D. chrysotoxum*, one of the best of the late-flowering *Dendrobiums*. Nothing can well exceed the rare beauty of some of the *Aerides*, and the Fox-brush Orchid (*A. Fiedlingi*) is one of the best; the long, dense racemes of delicate lilac-tinted blossoms very aptly suggests its popular name, and which, combined with their delicious perfume, renders it very desirable. The best of the *Odontoglossums* now in flower is *O. Cervantesi*, with flowers 2½ in. across, pure white, with the centre prettily marked with bars of rich chocolate colour. *Harrison's Oncidium* (*O. Harrisonianum*) is a very neat-growing kind with glaucous foliage, and a long spike of small flowers yellow barred with dark brown. *Masdevallia ignea* is a very showy and free flowering kind of the *Veitchi* section. The blossoms are large, with attenuated divisions, the upper one bending over the face of the flower in a peculiar manner. The colour is orange-scarlet striped with lines of a darker hue.—W.

Gardenias in Small Pots.—These are most useful when grown in small pots, such as 48's or 32's, for house decoration. Some plants of these here, fifteen months old, from cuttings, had from ten to fourteen blooms on each, grown in 48-sized pots, which in this case are more useful than when all the stock consists of large plants, and for putting in vases, baskets, &c., in rooms they are most useful, and will be sure to be appreciated, as most people like *Gardenias* on account of their fragrance and form. The ease with which they may be grown brings them within the reach of all who have a warm house, and they well repay any trouble they may have bestowed upon them.—J. C., Farnborough.

Few plants are more easily grown or produce flowers in greater profusion than the Tydæas. With a little care in their management during the spring months, a constant succession of their showy blossoms may be ensured for conservatory decoration throughout the whole of the summer when most other flowering plants will have become impatient of being under glass. The plant from which our drawing was taken continued in flower at the Pine-apple Nursery, Maida Vale, with but slight intermission from July until October in last year. Tydæas may be divided into two sections, viz., those which die down, like the *Achimenes*, and those which, although they require a period of rest, resent one of too long duration or too severe a drying off. As, however, through intercrossing, these two sections have become difficult to distinguish, the best way, perhaps, is to treat the whole as plants only requiring a partial rest. After they have finished flowering, therefore, they should be placed on a shelf in a greenhouse in which a temperature of from 45° to 50° is maintained throughout the winter, keeping them in the same pots in which they flowered, and giving them a little water now and then, being guided in the quantity to be given to each by the appearance of the leaves. Those plants which seem the most lively and green should have the most water given them, and in this way they should be kept until the middle of February, when they may be removed to a shelf in a warm house, and shortly after divided and started into growth in small pots. As the season advances and the plants become vigorous, they should be potted onwards, until they are in the pots in which they are to flower. The best compost to use for Tydæas (or, indeed, any other Gesneraceous plants) is a mixture of one-half turfy loam, one-fourth fibry peat, and one-fourth dried cow manure rubbed fine and well mixed with the other materials. The chief points to be observed while Tydæas are growing is to keep them always in a genial temperature, and in a place where cold currents of air cannot reach them. In June and July, when the buds begin to show colour, more air may be given, and as soon as the first flowers expand the plants should be placed in a sheltered part of the conservatory or greenhouse, where they will continue to bloom long after dull weather has set in. A few of the best kinds are—Robert le Diable, well represented in the annexed plate; rosea, pink spotted with dark rose, and dwarf in habit; gigantea, yellow spotted with scarlet; Vesuvius, red, spotted and lined with maroon; alba-hermesina, white and rose; Pericles, vermillion, yellow and crimson; tricolor, coral and white, spotted with rose; and venosa, magenta violet, spotted with purple.

JAMES O'BRIEN.

RASPBERRY-LEAVED PELARGONIUMS.

SWEETNESS and elegance, combined with such freedom of growth and vigour of constitution as permits, without injury, foliage and flowers to be out in abundance, will always render this *Pelargonium* a favourite; there is, moreover, a smaller variety of it, the leaves of which, from their minute sub-division, are exceedingly elegant. Both kinds grow freely, especially when planted out either in the open air or in the greenhouse or conservatory. They are well adapted for planting against a wall or pillar in some light situation under glass, as the growth in such positions is very rapid and continuous, and, though their lilac flowers are small, the successional way in which they are produced for several months—commencing early in the spring—adds much to their value. I think, from what has come under my own observation and the information I have gleaned from others, that the variegated *Pelargonium* called *Lady Plymouth* must be a sport from this variety. If my information be correct, this must have occurred some fifty years ago. I have often seen green shoots on plants of *Lady Plymouth*; in fact, we have several now that seem to be identical with those of the Raspberry-leaved kind (*P. Radula*). One need say but little about its culture, as a plant that has held its own for so many years, when so many of its contemporaries, introduced about the same date, have disappeared, requires no special treatment. It is just the plant for the cottage window, or to plant out in summer in the little border in front of the cottage.

E. HOBDAV.

Double Sulphur-coloured Primrose.—This is a charming variety, and one which lasts a much longer time in perfection than the original, and, being even more floriferous, it is a decided acquisition either for pot culture or for planting in the flower border, on banks, by the margins of woodland walks, and similar places.—W. G.

GARDENING FOR THE WEEK.

Greenhouse.

In order to keep up a continuous supply of flowering plants for conservatories and greenhouses, it is necessary to be continually providing subjects, which, though of minor importance, nevertheless, fill up the gap that intervenes between the blooming of the groups of plants that afford the chief display throughout the year, and without which, especially during the late summer and autumn months, there would be sure to be considerable deficiency.

Abutilons.—These almost incessant flowering plants now exist in such variety, and are so dwarf in habit and free blooming that they will flower even in very small pots. Young plants of them potted now and encouraged to make growth will, four months hence, have attained a useful size, keeping them stopped, as occasion may require, in order to lay the foundation for a bushy form, which will, in the majority of cases, be found the most useful. The stopping thus recommended by removing the points of the shoots with the newly-formed undeveloped flower-buds will induce the plants to make growth instead of flowering till they are required. By way of variety, and to assist effective arrangement, a few of them may be grown as standards, dwarf, or of medium-size, according as they may be found most suitable for the description of structure wherein they will have to be used. As has been already said, these plants are being raised in such immense quantities from seed that to give names would be useless; it will be sufficient to say that they exist in various shades of colour, from the deepest dark crimson through the paler hues of red down to yellow and white, and the plants are as different in habit as they well can be from the species first introduced.

Petunias, Single and Double.—At no season of the year are these so useful as late in summer and autumn; blooming, as they do, in the smallest state, and continuing to flower on up to the end of the year with very little attention, they deserve to be grown in quantity to come in about the time mentioned; they will be found especially serviceable, for when done with all of them can be discarded, excepting a store pot or two of each variety, which should be retained for purposes of propagation, a great advantage, as in winter most of the space allotted to greenhouse subjects is needed for plants of a more permanent character. Cuttings put in a few weeks ago and now rooted—kept three or four together in 6-in. pots in light rich soil, and moved into others 2 in. or 3 in. larger when necessary, keeping them sufficiently stopped to have them compact, and picking the flowers off till within a month or so of the time when they are required in bloom, and the shoots kept in position with a few light sticks and ties—will be most useful. Many of both the double and single sorts are well worth cultivating; the latter, consisting of beautiful and distinct colours, are now raised from seed, and yield an abundant amount of variety. Either the double or single kinds will do for hanging baskets, but the single being usually of a weaker and more procumbent habit, are better suited for the purpose than the others.

Amarantus and Balsams.—Young plants of the old-fashioned Cockscomb, the small Globe Amarantus, and Balsams should have every attention. They need plenty of light, and root room sufficient to enable them to get strong and vigorous in their early stages, otherwise their effective appearance when in flower will be much diminished. A few more seeds may now be put in with advantage to produce plants to bloom later on. In most places little difficulty after this time will be experienced in accommodating all such plants as those just named, for ordinary frames and pits—in which they will grow much better during the summer than in houses—will shortly be at liberty and ready to receive them.

Schizostylis coccinea.—This is another plant that deserves to be grown in considerable quantities by every one who possesses a greenhouse or conservatory. It is one of the finest late-flowering plants which we have out-of-doors, where it can be protected a little; but, when properly treated, it is even more useful for conservatory decoration. It may be managed in two ways, either planted out in rows or clumps in the open ground, in good moderately light soil that will admit of its being lifted in the autumn for potting without the breakage of root fibres, which inevitably happens when the land is of a heavy, close nature; or it may be grown in pots, six, eight, or a dozen together, according to the size of the pots, which may be from 7 in. to 10 in. in diameter. Each method has some disadvantages; but, on the whole, I prefer pot culture, provided the plants are properly attended to during summer with water. With all plants that require similar treatment to this it is requisite to urge the necessity for this attention, as, if allowed to suffer from want of water, they get so enfeebled as not to produce nearly their full complement of flowers. To avoid this I should recommend the pots to be plunged

in coal ashes or loose earth, set in an open position, and supplied with water often enough to prevent the soil ever getting dry.

Tritonia aurea and its Varieties.—For late summer and autumn greenhouse decoration these plants are equal or superior to many that require a great deal more attention; those who have only seen the common *T. aurea* can have no idea, fine as that kind is, of the effect produced by an association of the varieties of different colours as they now exist, from white, orange, buff, salmon, to red and crimson. For those who have not grown them I may say that for cultivation in pots they need little different treatment from that usually given to *Lilium speciosum*, except, that being so much smaller growing, they require proportionately less room, and may be grown in large numbers together in much smaller pots; but as to soil, potting, treatment from the time they appear above the soil in the spring through the summer up to the blooming period, and also when at rest in the winter, the management that suits *Lilies* will do for them. They must be kept free from slugs and snails, as these pests have such a liking for the leaves, that they riddle them completely, a mishap which has an injurious effect upon the blooming and greatly impairs their appearance.

Lilies.—Nothing is more useful for conservatory and greenhouse decoration than the autumn-blooming species of these plants, for which purpose, independently of their other merits, they deserve special attention. If amongst plants of *Lilium auratum* a few exhibiting a disposition to bloom later than the others be picked out and marked, they can, without any undue amount of retarding, be made most serviceable for the decoration of the greenhouse and conservatory in autumn. Then there are all the different varieties of *L. speciosum* that may by similar treatment be induced to come in at the same time. If a portion of the plants be now put at the north side of a wall, but not too much shaded or treated so as to chill them, until the weather gets warmer, they will afford a succession of flower after those more fully exposed to the sun are over.

Gladioli.—Few plants are more acceptable in the conservatory than these late in the season after the weather outside is such as to prevent the possibility of their flowers opening satisfactorily. They may be had in bloom in quantity in pots up to Christmas, but to come in at that time the planting should be delayed until June. If a small piece of reserve ground can be spared for them well prepared and made moderately light, they may be lifted and potted when their bloom spikes are formed late in the autumn before sufficient frost has set in to destroy them; doubtless this very late planting is not conducive to the well-being of the plants, and it might be urged on that account that the practice is not good, but effective varieties are now so cheap that they can be had for 2s. or 3s. a dozen or less, and even if after a single season's treatment such as this they are found useless, which is not likely to be the case, their culture would still be more economical than Hyacinth-growing, for beautiful and indispensable as Hyacinths are, they are individually much less effective than the Gladioli.

Vallota purpurea.—This free-growing and brilliant-flowered bulbous plant is one of the best of autumn decorative subjects which we possess. It is often grown with a little extra warmth in spring in the way in which the Amaryllises are treated. Where some are wanted to come in earlier than usual such treatment has the effect of inducing them to do so, but where they are wanted late, as is the case with the plants I am now particularly mentioning, they should be treated on the cool system, as in an ordinary airy greenhouse, but fully exposed to all the sunlight available; so managed, when the plants are strong they will produce a succession of flowers till the autumn is far advanced.

Tuberous-rooted Begonias.—For blooming through the autumn months a good number of these should be grown, selecting those that are the most distinct in colour. They soon acquire a useful flowering size, and if small-blooming bulbs be now at hand in 3-in. or 4-in. pots, keep them growing until towards the end of the month, when they may be turned out in a full open situation in light, free soil with just as much support in the shape of sticks and ties as the particular habit of individual plants are found to require. They should be well attended to with water, transferred to pots at the beginning of September, and kept at a little above an ordinary greenhouse temperature. Thus treated, they will bloom satisfactorily. Where a sufficient number of larger plants exist, they may be kept in pots proportionate to their size, placed for a few weeks in a pit or frame, and then have their pots plunged out-of-doors, stopping them once or twice during the season to induce a close enough habit, and they will keep up a complete mass of flowers through the autumn. For general decorative purposes, some of the less perfectly formed flowers from the florist's point of view—that is, those that have longer, narrower petals—are more effective, and have a more elegant appearance than the rigid, stouter-growing kinds.

Plumbago capensis.—This very distinct old-fashioned plant should be grown in considerable numbers by those who have to keep up a succession of flowers. For late blooming, and to succeed the plants that come in with ordinary greenhouse treatment, a portion may now have their shoots stopped, and in the course of another week or ten days be plunged out-of-doors in an open situation, where all that they will require is their shoots being trained, so as to prevent their getting into a straggled condition, and sufficiently supplied with water. In cases where the plants are furnished with roots enough to fully permeate the soil within the pots, manure water may be given once a week; this will have the effect of inducing a stronger condition of growth, which will have a natural tendency to further retard the formation of flowers, an object which it is desirable to attain, in order to induce as late a disposition to bloom through the autumn as possible.

Swainsonas.—These handsome pea-blossomed plants, although not naturally inclined to flower so late in the autumn as some subjects, may be easily had in bloom during September and October. Small specimens in 8-in. or 10-in. pots, are more useful than larger examples. They will be growing away freely now, and if the whole of the shoots, weak and strong, have their points pinched out about the end of this month, it will make them bloom later. The foliage is liable to the attacks of red spider if not kept syringed during warm weather, but if the water be applied freely once a week, so as to reach the under sides of the leaves, it will be sufficient to keep them in good condition. In the case of most plants that have a tendency to suffer from the attacks of this insect, if they can be accommodated in a light span-roofed pit, where they can stand on a floor composed of ashes, sand, or any moisture-holding material, it will be found much more conducive to their general well-being than shelves or wooden or stone stages, from the continual moisture that the former are always giving off, especially when most needed, during the hottest parts of the day; and on a cool, moist bottom, such as described, the work of watering will be considerably reduced.

Witsenia corymbosa is one of the best hard-wooded plants for blooming during the latter months of the year. It is of very easy culture, yet seldom seen, requiring no training or support in any way; the flowers are a beautiful blue, equal to the brightest of the *Myosotis*, continuing a long time in good condition, and though not produced in such quantities, or of a character that will permit of their being used in a cut state to the extent of some flowers, yet, from the distinct character of the plant and its flowers collectively, it associates well with anything else. It is a slow grower, and suitable for either a large or small house. It requires a sandy peat soil, and treatment in other respects such as the less tender of evergreen hard-wooded subjects. Where provision is now made with the plants I have above mentioned, there will be no cause for the complaint so often heard that greenhouses and conservatories through the summer and autumn months contain few flowers possessing interest or distinctive character.—T. BAINEs.

Flower Garden.

Though the bedding-out season, so far as dates are concerned, has arrived, suitable weather has not yet set in, and till this occurs and the weather becomes warmer, the planting out of anything of a tender nature had best be deferred. All hardy plants should be got in forthwith, and the places marked out and prepared for tender ones, in order that there may be no unnecessary delay as soon as it is safe to plant them; meanwhile continue to propagate *Alternantheras*, *Coleuses*, and *Iresines*, which cannot be planted too thickly together if they are to be effective from the first. *Pelargoniums*, *Lobelias*, *Petunias*, *Heliotropes*, and similar plants ought now to have full exposure, except on frosty nights, when canvas or mat coverings will be requisite and sufficient. Seedling bedders, such as *Ricinus*, *Wigandia*, *Solanum*, *Cannabis*, and *Ferula*, must still have [the protection of a cool house or pit, and be afforded plenty of space to induce sturdy growth. As these cannot be planted with safety till the first week in June, if they are likely to get pot bound, they should be at once shifted into larger pots in order that no check may be given to the plants, as that causes premature flowering or fruiting, which, as a matter of course, hinders that noble development of foliage which has made them so popular as easily raised sub-tropical plants. If I were desired to name the class of plants that have the most pleasing, most effective, and most lasting characteristics as bedders I should answer succulents; I know that they are not popular bedding plants, but I believe that they will yet occupy a prominent position, and that the gaudy, short-lived effects now obtained through the use of *Pelargoniums*, *Calceolarias*, &c., will be suppressed. The following list contains plants all suitable for bedding purposes, which if well arranged with dwarf Sedums, Saxifragas, and variegated *Mesembryanthemums* as undergrowths or groundwork, the result will be so satisfactory as to convince the most sceptical of their utility; their names are: *Agave americana* and *A. americana variegata*,

Yucca aloifolia variegata, *Sempervivum arboreum*, *S. arboreum variegatum*, *S. physaloides*, *S. canariense*, *S. Donckelaeri*, *Cotyledon pulverulentum*, *Pachyphytum bracteosum*, *Kleinia repens*, *Echeveria metallica*, *E. glauca metallica*, *E. agavoides*, *E. Peacockii*, and many others. Occasionally succulents are used intermixed with the ordinary kinds of bedding plants, but in my opinion such association is sadly out of place. Being such totally different types, the two classes should, at least, be planted in separate beds. Of course there is no good reason why the beds should be entirely isolated; rather the contrary, in order that comparison as to merit may be easily made; and if refinement and lasting properties are to win, the succulents will gain an easy victory. The heavy rain and snowstorms which we have had have hardened the surface soil of herbaceous borders and spring flower beds; and now that drier weather has set in this should be stirred with a hoe or small fork, to prevent cracking and to destroy weeds. Pyrethrums are now throwing up their flower stems and should be staked, as should also other plants that need support. Any vacant spots in such borders should be filled up by planting in showery weather any spare annual flowering plants which there may be at hand, or they may be sown in position, and if done at once, the following will flower profusely by August, viz., Sweet Peas, Lupins, Scabious, Schizanthus, Nemophilas, Larkspurs, and Candytufts.—W. W.

Auriculas.—Allusion was made last week to reporting collections of these; we have begun to do ours. This is a matter requiring some care. Many varieties of the choicest description have a tendency to rot at the side of the stem, or at least become affected by a dark spot, which spreads until the plant is destroyed. When it is first perceived it should be cut out and the clean portion dusted with quicklime; after potting these care must be taken not to give too much water. The long tap root must be cut off short, as the plants do best when the roots are kept in a compact mass near the surface of the pots. If it be intended to save seeds plants bearing seed-pods must not be repotted, but be placed, if possible, behind a north wall. I like to give such plants plenty of air night and day, allowing the sun to shine upon them early in the morning and after two p.m. Pay attention to small seedlings yet in the seed pots; as soon as they are large enough let them be potted off, and those that had been potted off in the autumn will now require to be repotted. Either place one plant in the centre of a 2½-in. pot or three round the sides of a 3-in. one. Owing to the cold weather which we have had the flowers have lasted a long time. We have at least 200 plants yet in full beauty; these must be kept cool by airing the house or frames in which they are placed freely, and shading them from the sun.

Carnations and Picotees.—Plants of these will have to be placed out-of-doors next week, probably; but before doing so, it is desirable to fumigate the frames in order to destroy green fly, which to Carnation growers is a troublesome insect. As the weather has been dry for some time, and promises to continue so, it would be a good plan to mulch the surface of the beds and borders, but we would not water until the nights are warmer. There can be but little growth while the thermometer at night falls a little over or slightly above the freezing point.

Hollyhocks.—If plants propagated in spring are not yet planted out, that should be done at once; they will flower with the Dahlias in September. Plants out and growing should be mulched, but do not water, unless it is absolutely necessary, until the nights are warmer.

Pansies.—We cannot boast much of the growth of plants of these put out into borders; they do not seem to like the dry east wind which has so long prevailed; nevertheless the plants look healthy, and fortunately are yet free from greenfly. Plenty of blooms can now be obtained from plants in pots. See that they do not suffer from want of water, and give manure water at every alternate watering. Air the frame freely and pick off old flowers and leaves as soon as they show signs of decay, and arrange the plants so that they may present a pleasing effect.

Hardy Primulas.—The directions given for the culture of *Auriculas* generally apply to these. They are plants that cannot bear neglect; and it is better to plant them out in a border and let them take their chance than allow them to suffer in pots through lack of air and water. *P. amena* and its varieties are now in full beauty in cold frames. They are much too fragile in leaf and flower to be planted out of doors. The trusses of flowers must be supported with neat sticks, and liberal supplies of water must be given at the root.

Tulips.—We have had the ground between the rows stirred with a small hoe, and after doing that a second time, a mulching of rotten manure will be placed over the roots. This ought to have been done a week or two ago, but the weather has not been such as to render it quite necessary to do so. We do not think the flowers will be so good this year as they generally are. Glass lights should now be

placed over them, but in our own case it is not yet convenient to use them for this purpose. Coverings should be placed over the beds every night to protect them from frost, removing them about eight in the morning.—J. DOUGLAS.

Hardy Fruit.

Up to the present time fruit prospects are good, but unless a decided change in the weather occurs very soon, the season will be too short to mature some varieties, even if they escape the sharp frosts which we are still having nightly. All coverings must still be continued, but any of a movable character should be taken off for at least a couple of hours each day. The foliage of Pears and Plums on walls will soon be sufficiently developed to be ample protection for the young fruit, and as soon as this is the case, all other protecting material should be removed. Peaches on well-protected walls have set fine crops, and are now ready to disbud, an operation which we prefer completing now whilst the buds are small, when time can be afforded to do so. If neglected, or the buds are allowed to get large, then, of course, it is best to disbud partially only, completing the operation by going over the trees three or four times at intervals of a few days, as the removal of so many large shoots at once would seriously check growth, and probably induce canker, gumming, or other organic diseases. Carefully examine the trees daily, as at this season and stage of growth green or black fly is almost certain to attack them, and any delay in the application of remedies makes the battle harder to win. Probably open-air Grapes will this year be a failure in the most favoured districts, for the Vines even now have barely started into growth; still, the usual cultural treatment must be given them as a foundation for next year's fruiting. Disbud them very early; it is not necessary to wait till the embryo fruit can be distinguished, as all the "shows" on open-air Vines are generally alike, and the only selection required is to distribute the fruit as evenly as can be done over all parts of the Vine. Rich surface-mulchings and a watering with liquid manure when the fruit is commencing its second swelling produce, in the south of England, Grapes which will bear comparison with those from ordinary greenhouses. Figs, too, will be late, and many will not ripen, except in the most favoured districts. Laying in the branches thinly, so that the fruit may be fully exposed to sunshine, will doubtless conduce to earlier ripening. Pinch out or press at the third leaf the points of all new shoots, and, if necessary, in order to prevent overcropping, entire shoots may be taken out. Constant repression of growth by pinching is a necessity as regards fruitfulness in the Fig, more particularly if the root-run be not circumscribed. With us Gooseberries and Currants are likely to be very heavy crops, and doubtless this is general. As a preventive of caterpillar it will now be advisable to sprinkle under the bushes, or, better still, the whole ground with quicklime. Cuttings of these that were put in when the trees were pruned should now be looked over for the purpose of rubbing off superfluous eyes or buds. Each tree should have a clear stem, say about 9 in. above ground, and if about three of the topmost shoots be retained, and the points stopped two or three times during the summer, by the autumn bushy little heads will be formed, and many of them will be good enough for permanent planting. Vigorous growing young trees will be improved both in appearance and fruitfulness if the leading or strongest-growing shoots be stopped a time or two during the growing season.—W. W.

Parks and Open Spaces.

Avenues.—Trees in avenues, so long as they need artificial supports, require attention, in order to prevent their being injured by too tight ties. Tying loosely is an evil in the opposite direction, which must also be guarded against. Attention should likewise be paid to watering during the early stages of the development of the foliage, and in the case of trees which show signs of weakness, a little manure water should be added, or the trees should be mulched. The soil at the base should be frequently moved in the case of those on the margins of roadways, but not so much so as to injure the roots.

Shrubberies, Plantations, and Borders.—On dry warm days the hoe must be used where weeds make their appearance. In herbaceous borders plants requiring supports should have them; mulching with well-rotted manure will materially assist weakly-growing kinds, and aid in fully developing the flowers. Annuals should be kept free from weeds, and thinned out where necessary. Many kinds which have been grown in frames, such as Stocks, Asters, Zinnias, &c., may now be planted out, choosing showery weather for the operation; the same observations apply to perennials from the nursery beds. Seeds of nearly all kinds of annuals, biennials, and perennials may now be sown.

Flower Beds.—As spring flowering bulbs go out of bloom they should be taken up and laid in sandy soil until they have ripened off, when they may be sorted and stored away in a dry airy

place until the time for planting has again arrived. Pansies, Daisies, Aubrietias, and many other spring bedding plants will continue flowering until the time arrives for putting out summer bedding plants; but all beds which can be cleared should be prepared for other plants by manuring, digging, or by adding fresh soil where necessary. They should be ready by the second or third week in May, when, should the weather be favourable, the great bulk of bedding plants should be ready for planting out. In the case of Pelargoniums, Calceolarias, Ageratums, and similar plants, especially where large quantities are needed, as is often the case in public parks, it is by far the best plan to have them potted singly. Lobelias, Pyrethrums, &c., may be wintered in pots, pans, or boxes, and watered, if necessary, as soon as planted. Watering, indeed, should continue until rain falls, and must be done in the morning and evening, never in the middle of the day, as it injures the plants and hardens the surface of the ground. After rain, the hoe should be lightly used among the plants, or, what is better, the beds should be forked over with a small hand-fork.

Lawns and Grass Plots.—Grass should be rolled about three days before it is mown, and again directly afterwards; edges of beds and verges should be neatly clipped with shears or cut with the edging iron. Any subsidence in newly made plots should be at once remedied. In every case where it is necessary to lift and relay turf, immediately it is down it should be thickly covered with fine rich soil; the unsightliness of this for a few days will be amply rewarded by the Grass being saved from burning, and by its becoming green in a much shorter time than when it is left bare, as is too often the case; moreover, it fills up any interstices which may be left, and acts as a fertiliser. It is also advisable to sow about two bushels of seeds of fine lawn Grasses per acre at the same time, lightly raking over the surface; it may then be left for a few days, raked over again, and thoroughly rolled; thus treated, a good lawn may be formed even in dry weather. In all small, open spaces surrounded by buildings, where radiation is excessive, water should be laid on, so as to be available when required, for the purpose of keeping the Grass in good condition. A very frequent source of failure in the case of lawn Grasses is defective drainage. On very large, open spaces, the Grass may be kept in good condition by grazing, for which purpose sheep are preferable to cattle.

Climbers on Walls and Fences.—These should be pruned, cleaned, nailed, and mulched. With very little care or trouble, walls and fences in towns might be made extremely pleasing to the eye during summer. Few really good evergreens are available for the purpose; one, however, which is not sufficiently used is the Euonymus; this is a most excellent subject for covering walls; it grows freely and withstands smoke. Some of the shrubby Honey-suckles may also be made available for the same purpose, especially on open fences, and when mixed with Ribes the effect is strikingly pretty. Climbing Convolvulus and Nasturtiums will also assist in beautifying unsightly structures, whilst in out-of-the-way corners Scarlet-runner Beans may be used with advantage.—E. DENNIS, Southwark Park.

Extracts from my Diary—May 12 to May 18.

FLOWERS.—Boxing tubers of Dahlias, and placing them in pits in order to start them. Sowing Mignonette in pots. Potting Caladiums, Achimenes, and Epiphyllums. Tying, stopping, and potting Schizanthuses, Mesembryanthemums, Petunias, Alyssums, and Fuchsias. Potting Camellias and Amarantuses. Propagating double Primulas. Sowing in pots seed of Dianthus Crimson Belle and Eastern Queen; also Eschscholtzia Mandarin and Sweet Pea Violet Queen. Propagating Bouvardias and double white Primulas.

FRUIT.—Pruning and nailing Fig trees on south walls; also tying Figs in houses. Thinning out and tying shoots of Melons, and fertilising all open blossoms. Putting supports to Melons swelling their fruit. Tying and stopping Cucumbers. Thinning Grapes. Sulphuring hot-water pipes in Vinery for prevention of mildew. Top-dressing Cucumbers. Thinning Muscat Grapes. Tying and stopping Vines as required, and cutting out superfluous branches of fruit. Tying Peach trees in early house. Hoeing between Strawberries; mulching them and dressing them with lime.

VEGETABLES.—Shifting Tomatoes for fruiting into cold houses. Pricking out first sown Celery into prepared frames. Potting a second batch of plants of Vegetable Marrow. Sowing another bed of Broccoli, Cauliflower, and Savoy. Hoeing between growing crops of Onions and Potatoes. Earthing up the latter where necessary. Planting out Vegetable Marrows on prepared bed, and sowing seed under handlights on manure bed. Tying up Lettuces to blanch. Sowing crop of summer Spinach. Earthing up Peas and Potatoes. Hoeing between growing crops of Potatoes, Onions, Greens, and digging trenches for Celery. Dressing them with Amies' manure, and planting summer Lettuces on the ridges.—R. G., Burghley.

ROSES.

INSECTS HURTFUL OR USEFUL TO THE ROSE.

THE GREEN FLY. NEW RESEARCHES ON ITS HABITS.—The green fly is only too well known to horticulturists and amateurs by the destruction it commits during the whole Rose season, and every one is on the look-out for the best means of destroying it. The usual way to arrive at this result is to study the habits of the insect, to know exactly when it makes its appearance, how it multiplies itself, and how it passes the winter. The following are the results of our observations on the subject. We will first of all give a description of the female *Aphis Rosæ* :—

The body is of a delicate green in the summer, brownish-green in the winter, and about $\frac{1}{2}$ in. in length, of an ovoid form, swollen in the hinder part. Its head is black, and it has two little black eyes that are almost invisible, and a trunk or sucker formed of three pieces; a couple of black antennæ, or feelers, which fall backward over the back when the insect is at rest, but which are held upright when it walks. The thorax is black, and the three pairs of jointed legs with black joints are studded with three black spots. The longest feet are inserted at the base of the thorax, on each side of the abdomen. On the upper lateral surface there is a kind of horny process which secretes a gummy matter, which flows out in the form of transparent globules or small masses. It has, also, four wings, of which two are very small; the two others, which are twice as long as the body of the insect, are raised over the back, and are inserted in the side of the round portion which forms the thorax. It is these winged aphides that give birth to the first spring brood. They make their appearance just as Nature is awakening, and may be found crawling on the leaf-stalks and shoots of the Rose trees, where they lay, so to speak, not eggs, but living aphides. The young aphid begins to move about as soon as it is born, and generally takes refuge at first underneath its mother. The female lays about ten young ones in one place, and then takes flight to a distant part of the shoot, where it deposits another family of ten, and so on until the supply is exhausted. One female which we placed on a shoot laid six young ones in two hours, representing a production of seventy in the four-and-twenty hours. The first brood began to produce young ones in turn after their first moulting, which generally takes place in about fifteen days. This period of the aphid's life may be easily recognised by its torpor, and by its producing a quantity of floury matter with which it seems to envelope itself after oft-repeated efforts. The outer skin of the aphid then splits on the top of the head, and the insect gradually struggles out of its cast-off coat, which it leaves adhering to the leaves. It is only after the third moulting that we can recognise the females by the description given above. The wings become developed from about the seventieth to the seventy-fifth day. Before this period they may be recognised by the upper part of the thorax being provided with little transparent vesicles falling from the sides. The membranes constituting the wings are bent back on themselves, and the lower part is covered towards the head of the aphid. When once the wings have made their appearance the aphid has gone through all its transformations; it, consequently, takes flight, and distributes its progeny about the tree in families of ten or twelve. We have never yet found the eggs of the aphid on the Rose tree, but very often during mild winters, such as those of 1861 and 1869, we have seen aphides pass the whole of the cold season on the leaves which have escaped. An analogous observation was made by us in 1861, on the twigs of the Almond tree and Peach tree which were exposed to the south. We have, therefore, come to the opinion that the winged aphid drops with the leaf when it falls, passes the winter at the foot of the tree, possibly under the protection of the leaf itself, and makes its reappearance in the spring. What naturalists have hitherto taken for the eggs of the aphid are nothing more than the last brood of aphides, which assume a black, thick coat, in order to stand the winter's cold. The aphid, according to our observations, appears to be exclusively viviparous, that is to say, it brings forth its young alive without the intermediate laying of an egg. We must, therefore, watch for the appearance of the mothers of the first brood in the spring, and endeavour to destroy them by every means in our power, especially with copious fumigations of Tobacco smoke. It must be borne in mind that by killing one female in the spring we prevent the birth of many thousands of others during the year. Luckily, man has some able allies in his war of extermination against the aphides. The ordinary ant is exceedingly fond of the liquor secreted by the aphides, and they suck the insect to death in a very short time. Whenever we see even a single ant on a Rose tree we may be sure that the aphides are not far off. The larvæ of the *Hemerobius chrysops*, or lace-winged fly, also commits terrible havoc amongst the aphides, but their most terrible enemy is an almost microscopic ichneumon, which fastens on

the aphid, piercing the lower portion of its abdomen with its ovipositor, leaving an egg in the puncture. The wounded aphid at once separates itself from the rest of the flock, fixing its sucker in the skin of the shoot and remaining perfectly quiet and motionless. Its coat turns from green to pink, and from pink to bronze. It is not known how soon it dies after the attack, but about thirty days after its dead body splits open and a little ichneumon flies out, having undergone all its insect transformations inside the body of its victim, where it has not only found food, but lodging as well. In the winter of 1868-69 we made several observations on the tenacity of life shown by the aphides on the shoots of Rose trees. During the night of January 20, 1869, they resisted a cold of 14° Fahr. below freezing point. The shoots themselves were frozen, but the aphides were still alive. The old ones had preserved their usual green colour, but the young ones had become coppery in hue. This fact, amongst others, goes to prove that our winters do not exercise much effect in destroying insects generally.

DESTROYING THE ROSE APHIS.—This aphid being the most destructive of all the pests that infest the Rose, the means devised for its eradication are endless. The most efficacious, according to our own idea, is fumigation with Tobacco, which must be performed as follows: A kind of conical hood of oiled or varnished cloth is spread out on four hoops of iron wire, the lowest one being 3 ft. or 4 ft. in diameter, the three others diminishing gradually to the top. The hoops are kept together by five longitudinal rods, which are fastened together at the top of the cone, the whole of the apparatus being in the form of a sugar loaf. To the bottom hoop a cylindrical cover of the same material is fixed, the lower end of which is to be gathered round the bottom of the stem of the tree, a hole being left for the smoke to pass through. The branches of the head of the tree are drawn together and tied firmly with one or more pieces of twine. The double covering is then put over the tree and the lower part tied closely round the base of the stem. The apparatus is kept in its place by being suspended from a kind of gallows or a tripod made of three laths. Tobacco smoke is then blown through the aperture left for the purpose through a tube of about 1 ft. 8 in. long, and connected with a fumigating bellows. The tube is made of this length purposely, so that the smoke will have time to cool before it reaches the plants. If a fumigator be not at hand, we may use a flower pot half full of hot cinders, the Tobacco being slightly damped and placed on the top. The whole should be covered over with a kind of reversed funnel, the tube of which should be at least 3 ft. long and bent on itself at the end. The Rose trees should remain under the influence of the smoke for six or seven minutes. This method, which is excellent in the case of standard or half standard Roses planted in isolated positions, is, of course, inapplicable when they are planted in clumps or beds; in the latter case, use a frame or a damp cloth kept up by half-hoops, to keep it from injuring the trees. The whole being made as air-tight as possible, Tobacco smoke is introduced for ten minutes. These two methods of destroying the Rose aphid have been used by us since 1850, and success is always certain, provided the smoke is cold when allowed to come in contact with the plants. In any case, if only a few of the aphides escape destruction all our labour is lost; it is therefore necessary to daub the branches and shoots with the composition presently to be described, if this operation has not already been performed for the destruction of the Rose kermes. Every morning the stem of the Rose tree is tapped gently with a stick or cane, and the aphides drop off and fall to the ground, when they die of hunger, whilst those which endeavour to climb back to their old positions are stopped by the composition with which the branches and shoots are covered. In addition to the method of destroying the Rose aphid which we have just described, there is another to which we give the preference, on account of its being much more simple and rapid in its effects. We take a disc of sheet zinc, as shown in the annexed figure, of about 2 ft. in diameter, with a slit about 1½ in. wide, extending from the outer edge to the centre, so as to allow the passage of the stem of the Rose tree. The edge of the disc is turned over a ring of iron wire about ½ in. thick so as to strengthen it. On the underside a forked cross-piece of Pine or Oak is fixed by small nails, the two forks passing on each side of the slit, the other end forming a handle about 6 in. long, which was to hold the disc. This cross-piece with the handle should measure 2 ft. 6 in. long, and 3½ in. wide. The disc, when required for use, is smeared over with a layer of gas-tar or marine glue with an ordinary paint brush. Taking the handle in the left hand, we hold it under the Rose tree, the stem of which passes through the slit, as shown in the figure. The stem and branches of the tree are then gently but repeatedly struck with a small stick which has been covered with pieces of cloth, so that it may not injure the bark of the tree. By this means the aphides fall on the sticky material with which the disc is covered, and from which it is impossible to escape. With this simple appliance we may clear a large number of trees from the aphid in a very short space of time. As the smaller aphides adhere to the young

shoots with great pertinacity, the operation must be repeated every few days until they have entirely disappeared. Where it is difficult to procure gas-tar or marine glue, or in cases where their use is objectionable, the following composition, which we make for our own use, may be successfully employed: Melt in a pipkin 1 lb. 4 oz. of white Burgundy pitch, stirring it with a stick or wooden spatula. When the pitch is melted, add 1 lb. of ordinary lamp oil; stir until the mixture is complete, when it may be removed from the fire. This composition always remains in a semi-liquid state, replaces the gas-tar very advantageously, and costs very little. We ought to remark that the surface of the disc should be cleaned and receive a fresh coat of the composition every time it is used.

CATERPILLARS WHICH PREY UPON THE ROSE.—These troublesome visitors belong to the Order of Lepidoptera, and are the larvae of small butterflies or moths which fly by night, and are hence called Noctue. They hide for days and days at the base of the stem or branches, and, being of a greyish-green colour, are easily confounded with the bark of the tree. We have found three families of these caterpillars preying on the Rose. The first variety is a green caterpillar



Rose Aphid Trap.

about $\frac{1}{2}$ in. in length, and 1-16th in. in diameter. Its head is green, and seems to be destitute of eyes. It is covered with a few light-coloured hairs, and has four longitudinal markings, covered by ten annular lines of a blood-red colour. It has six white transparent feet, four false feet, of which the two at the base of the abdomen serve for locomotion, as in the looping caterpillar. It hides itself in the folds of the leaves of the Rose tree, upon which it feeds. When it wishes to regain the earth it drops by a slender thread. The second variety lives on the Cabbage Rose tree. It is $\frac{3}{4}$ in. long and 1-10 in. in diameter. The body is dark green on the back, and dead white on the under side. The head is spherical, and of a yellow colour. It has two black eyes, six red legs, and seven pairs of false legs provided with suckers. The third variety is 3-5 in. long and 1-5 in. in diameter; the head is long, and of a yellow colour; the body is pearly-brown with a black band on the first ring. The nine rings are each marked with a black spot. It has six black legs and four pairs of false legs. This larva is most destructive to Hybrid Roses. It envelops the young leaves with its silky threads, hiding in their folds, where it undergoes the operation of moulting, after which it drops to the ground, when it becomes transformed into a chrysa-

lis. Specimens of three varieties were enclosed in glass bottles on May 10, and provided with food in the form of Rose leaves. From May 20 to 25 they were transformed into little oval chrysalises, which, in due course, produced a number of small moths of various colours, the general character of which was dark grey, with darker markings on the wings. To destroy these moths, we place a number of wide-mouthed, glazed, earthenware vessels, one-third filled with honey and water, at the foot of the trees. The moths, which at this time have but few flowers from which to gather food, alight on the surface of the honey and water and are drowned. On calm spring nights we may destroy great quantities of these moths by placing a lighted candle in a pan of water; the moths, being attracted by the light, falling into the water and drowning themselves.

THE RED FLY (*Tenthredo Rose*, or *Selandria excavator*.—Guerin.)—This fly belongs to the Order Hymenoptera. For many years enquiries were constantly being made as to the kind of insect whose larvae pierced the young buds of the Rose tree during spring. This fly, which we have studied attentively for the last twenty years, begins to make its appearance about the beginning of April. It measures about $\frac{1}{2}$ in. long, and about 1-25 in. in diameter. The body is black as well as the head, in which there are a couple of eyes of the same colour, and two jointed antennae, extending to the right and left from the side of the head. The thorax is black, and carries the first pair of feet, the two other pairs being inserted at the base, just where it is joined to the abdomen. The six feet are black at the end of the thighs, and white on the other portions; each leg has eight joints. The insect has four wings, the shorter ones with brown divisions. When the insect is at rest, these wings are folded together and lie along the body, which in the male is long and oval, but terminated in a point in the female. When the time for laying has arrived, the female looks out for a fitting place—on a shoot generally, at the fork of the second leaf from the top. It is here that she lays her eggs—generally a single one, rarely more. From the egg proceeds a larva, which pierces the epidermis of the young shoot and feeds on the utricular tissue. This larva is $\frac{1}{2}$ in. long and 1-15 in. in diameter. In colour it is cream-white, with a dark line extending along the back. The head is spherical in form and straw-coloured; there are also three pairs of white feet, and nine false feet on each side. During its growth the caterpillar pierces a hole in the epidermis of the shoot, after which it reaches the ground by means of a thread which it spins, and after burying itself in the earth undergoes the usual insect changes. According to our own special observations, we should advise Rose growers to endeavour to capture these flies with an ordinary butterfly net in the early morning, when they are the most easily taken, or, at any rate, in the middle of the day, when they are more shy. As for the larvae themselves, we must prune off the affected shoots, which are easily recognised by their withered appearance, taking care to burn them for fear of accident. This operation should be performed about the beginning of April, and should continue until May, at which period the bark of the shoots has become sufficiently thick to resist the attacks of these larvae, which are only apparently mischievous during the early part of the spring.

J. LACHAUME.

Pot Roses.—Where these are grown in considerable quantities in a house exclusively devoted to their culture or amongst other plants (the former is much the most satisfactory), there needs at this season to be a good deal of difference in the treatment which the plants receive according as they have flowered early or late. The principal blooming with the greater number will, as a matter of course, now be past, but those that have been kept back to produce flowers up to the time when they may be expected out-of-doors should now be put together where they can be shaded from bright sunshine. More air will be required, but it must still be given so as to avoid cold draughts, as the foliage produced under glass even now with long days and increased sunlight is much tenderer and more subject to mildew than that out-of-doors. The principal attention should be directed to the plants that have furnished flowers through the winter; those that produced bloom about the close of the year from buds set before the plants were taken indoors ought now to receive such pruning as they require, but too much should not be cut away, as, for growing in this manner, good-sized examples bear proportionately a very much greater number of flowers than small ones; the best course to follow is to cut out from the base the weakest shoots, shortening the strong ones so far, but not more than is necessary to keep the plants from getting too tall. Repeat those that require it, removing all the old soil that can be got away without much disturbance of the roots, replacing it with new strong, holding loam to which should be added some sand and a liberal amount of rotten manure. Plants that do not want more root-room may have the surface soil removed and new material put in its place. It is well to examine the drainage of all, especially when there has been any worms in the pots, for where these have existed it is not usually in a satisfactory condition. Plants

treated as the above had better be kept under glass until the close of the month. Those that have flowered later, particularly the Tea varieties, must still have the protection of pits or frames, gradually inuring them to more air before they are turned out. Where room can be found, and the object is to get the plants up as strong and vigorous as possible, the Tea kinds will be found to do best wholly under glass or nearly so. Keep a sharp outlook for mildew, red spider, and aphides, and apply the proper remedies the moment any of them is observed.

Roses planted out and growing on the rafters or covering the roof of the house, especially vigorous kinds, if allowed to extend themselves freely produce in a few years wood rather than flowers. To avoid this, they will be well at whatever time the main blooming is completed to shorten back well down towards the point from which they spring about one-third of the principal shoots of which each plant consists. If this be done sufficiently early, enough strong growth will be produced from these headed-back branches to afford a sufficient and almost certain supply of flowers the ensuing year. This method will be found preferable to allowing the plants to go on for some seasons with comparatively little pruning.

Outdoor Roses.—The ungenial weather lately experienced has had a marked effect on outdoor Roses, particularly those that were pruned early; although the shoots are not killed back, the leaves have a shrivelled, seared appearance, that indicates a weakened condition of the growth, unfavourable to the development of flowers, and not very favourable to their greatest enemies, the Rose maggot and aphides, which always seem to thrive best when growth makes least progress. These pests should be continually sought for and destroyed, especially the maggot, for even where Roses are only required for ordinary decorative purposes, if the grubs be not killed four-fifths of the flowers will be so disfigured as to be useless. Tobacco water will be found the best remedy for aphides, particularly in the case of plants on walls, where they increase the fastest. In such situations, where the roots have often little room to extend beyond the narrow border in which they are planted without getting into a gravel path or similar ungenial medium, it generally happens that after the first few years the plants get into such a poor condition as to be ill furnished with both shoots and flowers. In positions of this kind it is seldom that anything can be done in the way of adding new soil, but I have often found it of the greatest use to thoroughly saturate the gravel path over the roots with strong manure water, given, of course, in a clear state, so that it would not affect the colour of the gravel. In order to completely saturate with the liquid in a way to fully benefit the plants, it is often necessary to dam the water up on the walk to prevent its running away until it has had time to soak down.—T. BAINES.

THE KITCHEN GARDEN.

Cutting Young Asparagus.—Two years ago a large quantity of Asparagus seed was sown here; last year, about this time, the young plants were transferred to well-prepared permanent beds, and during the season they made excellent growth. Throughout the winter the crowns were covered with manure to the depth of 2 in.; when growth recommenced this was taken off and a good sprinkling of salt thrown over the surface. Now the shoots are coming up as thick as one's finger in clusters. To leave them all would cause the stems to be quite a mass during the summer, which would be more injudicious than beneficial; therefore, we are cutting and using many of the shoots. Many assert that Asparagus should not be cut until the roots are three years old, and little until the fourth year; but this, in our case and similar instances, would simply be losing one or two years' production without reaping any advantage. The strength and quantity of the shoots should always rule the cutting more than the age of the roots.—CAMBERIAN.

Early-planted Potatoes.—It would be interesting to know how much those have gained who planted their Potatoes in March. No Potatoes could show their heads above ground during the past weeks; where, therefore, is the good of planting when at least six weeks must elapse ere it will be safe to allow the tops to appear above-ground? The most ordinary observer has seen that of late years it is not safe, as a rule, to have the growths of tender plants above ground until the middle of May; and, as far as Potatoes are concerned, this can be secured by planting from the middle to the end of April. Earlier the ground is cold, and the sets and what spindly growth they make are exposed during their long existence beneath the soil to the attacks of wireworm, slugs, grubs, and rot; when planted later the sets germinate quickly, come away strongly, and escape late frosts. Planting early is with many thought to be a panacea for

the disease, but planting must, in a common sense way, be regulated by the season. I planted the bulk of my best kinds on the two last days of April, in ground ready prepared, in rows 3 ft. apart, to the extent of one-third of an acre. Those who practise early planting recommend burying the sets to a depth of 6 in. to avoid frost. What could be worse, when 4 in. is depth enough for all ordinary purposes? Sets well prepared by singling out and exposure to the light will make a growth that will forward them ten days or more when planted; therefore, if planted about the end of April, they will be through the soil in about a fortnight, and will be equal to the earlier-planted ones in less than a month.—A. D.

Potatoes Early and Late Planted.—We are always anxious to get early sorts of Potatoes planted as early as possible after the soil is in good condition, but this season the earliest planted have had a poor time of it. The ground has been so wet and cold, that in all probability late planted sets will come to maturity first; moreover, slugs, wireworm, &c., prey on the earliest planted ones, while late planted ones comparatively escape. This season has upset many practices that previous mild winters had rendered common.—J. G.

Early and Late Broccoli.—These come into use very slowly this season; even such sorts as the Penzance Early White are only just forming heads, and doubtless, when the long-expected warm weather comes, both early and late sorts will come in together.—J. G.

Compton's Surprise Potato.—I have had this Potato for several years, having obtained the tubers from a leading London house. Two years ago the leaves blackened early, and I was afraid the crop was lost, but not a large proportion of tubers were tainted. Its foliage is strikingly handsome, and it has always yielded well with me. Using it now in May, there cannot be a better table Potato.—WM. JOHNSTON, Ballykilbeg, Co. Down.

Slugs and the Frost.—There can be no question that slugs get out of the reach of frost however severe, for never do I remember them so numerous or destructive as they are this season; and as seedlings of all kinds are at a standstill, they have a far better chance of destroying crops than when the latter grow quickly and get out of their way. My impression is that during winter most of our garden destroyers get safely out of the reach of frost, and that after a long period of hard weather they come forth from their retreats in spring more voracious than after a mild winter.—J. G. L.

GARDEN DESTROYERS.

THE GIPSY MOTH. (HYPOGYMNA DISPAR.)

THIS handsome moth is another member of the family Bombycidae, whose caterpillars at times do a great amount of damage in orchards and among forest trees; when in great numbers they almost entirely strip the trees of their leaves. It is not a very common insect, as it is somewhat local, but where found it is often abundant. It has been given the name of dispar on account of the difference both in size and colour between the males and females. The caterpillars, owing to their voracity and size, are very mischievous, and soon ruin the foliage of any tree they may attack. Their favourite food appears to be the leaves of Oaks, Limes, Elms, and most fruit trees; but they are not very particular in this respect. The best means of getting rid of this insect is by destroying the masses of eggs, which are often $\frac{1}{2}$ in. high and 1 in. in diameter, and contain 400 or 500 eggs; they may be found without much difficulty if carefully looked for. The eggs are generally laid in August or September on the trunks or branches of trees, or on palings, walls, garden buildings, &c., and are covered by the female with yellowish hairs from the end of her body, which completely protects them from the weather. Scraping the bark of fruit trees is a good method of destroying the eggs of this and many other insects. If the pieces of bark, &c., scraped off can be collected by laying a piece of sacking, or something similar, at the foot of the tree, the operation will be much more effectual, as many eggs and chrysalides of various insects fall to the ground unimpaired, and though in an unfavourable position, may yet be reproductive. Of course, if the scraping be done in the autumn there is less danger of any eggs on the ground hatching in the spring, as the cold and wet weather of winter would probably kill them. The caterpillar can only be destroyed by hand-picking or shaking them off the branches. The latter, however, is not very easy, as the caterpillars generally shelter themselves in some crevice or sheltered place on the branches during the day, and feed only at night-time. They should be handled with much caution, as their hairs are very liable to stick into the skin of one's fingers, and cause much irritation. These hairs are no doubt a great

protection to the caterpillars, as few birds will touch them; and the parasitic ichneumons must find it more difficult to lay their eggs in caterpillars which are surrounded by such a *chevaux de frise* than in the smoother ones. The perfect insects, particularly the females, may easily be seen, on account of their light colour, resting on the stems of the trees, and as they are very inactive are easy to kill. The chrysalides may be found inclosed in very slight cocoons, in sheltered positions on the trees or somewhere near. The moths are not generally found until the end of July or the beginning of August; the females are seldom seen on the wing, but may be found on the stems and branches of trees; the males may be seen flying about in search of the females. The eggs do not hatch until the following

Caterpillar of *Hypogymina dispar*.

spring, when in April or May, according to the season, the caterpillars come forth, and at once begin to search for their necessary food. Those from the eggs laid on the trees have not far to go, but others have to make what must be to them a very considerable journey before reaching an appropriate tree. The havoc they commit among the opening buds is very great, even though their size at this season is so small. Having changed their skins several times, they attain their full size about the end of June, soon after which they select some

*Hypogymina dispar*.

sheltered position on the trees or elsewhere, and, spinning a very slight cocoon round themselves which sometimes hardly cover them, become chrysalides. The insects remain in this state for about a month. The moths measure across the open wings from $1\frac{1}{2}$ in. to 3 in.; the sexes differ considerably in size and colour as before mentioned. The males are usually much smaller and darker in colour than the females; their antennae are deeply toothed on both sides like a double comb; their general colour is a greyish dusky brown, varying considerably in intensity, with darker markings, which are sometimes hardly visible, and their bodies are comparatively slender. The general colour of the females is a greyish-white, their antennae are much less deeply toothed than those of the males, and their bodies are proportionately much stouter, and striped transversely with alternate dark and light grey bands, which are somewhat darker towards the apex; the body is terminated by a kind of brush of reddish-yellow hairs, with which the female covers her eggs as soon as they are laid. In both sexes the

upper wings are marked with three or four more or less interrupted, blackish lines, composed of a series of crescent-shaped marks, and a row of dots of the same colour on the end of the margin of the wings. The lower wings have a row of dark dots round the outer margin. The caterpillar is blackish-brown with fine wavy and reticulated markings of yellowish-grey on its body. Its head is large with fine grey markings, and with a large, triangular, yellow spot in the centre. The body consists of twelve joints, of which the first three, the sixth, seventh, eighth, ninth, and last each bear a pair of legs. On each joint are several large tubercles, which are surmounted by a tuft of stiff, reddish hairs; the tubercles on the first five joints are blue, those on the others reddish-brown. On either side of the front of the first joint are two long tubercles, each carrying a long tuft of hairs. The chrysalis is dark brown, and terminates in a long point furnished with small hooks.

G. S. S.

BUSH FRUITS IN MARKET GARDENS.

THESE consist of Gooseberries and Currants, to which may also be added Raspberries, all of which are largely grown in most of the market gardens near London in which orchards exist, for it is under the shade of such trees that the bulk of bush fruits are found. In such a position they are liable to many disasters; therefore, plants having two or three branches springing from the root are preferred, because should a limb be lost there would still be one or two remaining, whereas had there only been one stem, a fresh plant would have been needed.

GOOSEBERRIES AND CURRANTS.—These are propagated by means of pieces of the young wood collected together at pruning time and made into cuttings 1 ft. or so in length. All buds on the part intended to be inserted in the ground are removed, in order to prevent them from producing suckers that would afterwards prove troublesome. They are then placed in rows nearly close together, the rows being about 12 in. asunder, and made firm by treading the ground about their bases. Sometimes they occupy a narrow border by the side of a hedge or wall; but, generally, they are placed in open positions and intercropped with spring Lettuces. The ground in which they are to be inserted is in all cases deeply dug and well manured, and in this they quickly root and make useful sized bushes. Some raise their Currant and Gooseberry trees from layers, and in that case in the month of March whole rows of bushes may be seen layered, the branches being kept in their places by means of wooden pegs. The youngest and most supple branches are selected for this purpose; their points are cut off, a slight slit is made where the bend enters the ground, and a few inches in depth of soil are placed over the part layered. Branches thus treated soon begin to push shoots from every joint, and when these young growths attain a length of 5 in. or 6 in. some more soil is placed round their bases from the alleys. In the following October or November the layers are lifted and cut into pieces, each having two or three shoots and plenty of roots; they are then planted in nursery lines, and are allowed to remain another year, after which they are removed to permanent quarters.

In wet, low-lying districts market gardeners plant their bush fruit trees on mounds or ridges from 6 ft. to 8 ft. apart, and on the sides of these are planted Violets, Wall-flowers, Tulips, Strawberries, or any dwarf-growing crop that is benefited by a moist soil. A pathway for gathering the fruits and flowers is left between the ridges; in this way little ground is wasted, and more profitable results are obtained than would be the case were such fruits planted on the level with no other crop between them. In wet seasons small plants are much injured, so much so that some growers find a difficulty in disposing of them, except at unremunerative prices.

From Kent come the chief supplies of small fruits for preserving, and the quantities of these sent annually to London and other large towns are enormous; people, indeed, unacquainted with fruit culture on a large scale can form no conception of the vast plantations of orchard and bush fruits that are to be found in Kent. About Swanley and its neighbourhood, from any hill-top, may be seen miles of the higher-lying grounds crowned with Gooseberries, Currants, and Raspberries, and the valleys filled with Hops. In some places may be seen patches of Potatoes or Mangold, crops which are always grown on land to be afterwards devoted to fruit culture. This is done in order to get the ground thoroughly clear of Bindweed (*Convolvulus arvensis*) and other weeds, which it would be difficult, as well as expensive, to do after the fruit trees had been planted. Most people, when planting fruit trees, prefer a southern aspect; but in Kent an easterly one is always chosen—and this for two reasons: one, because the produce is always later, thus escaping, to some extent, the late frosts in spring; the other, because, should frost occur, the sun strikes the trees, gradually thawing and drying the blooms without injuring them; whereas, in a southern aspect, they are more suddenly exposed to the full force of the sun, and serious injury is often the result. It is a well-known fact, too, that crops in elevated positions escape frosts better than those in valleys. This was particularly noticeable in the case of Raspberries, which on the hills wholly escaped the severe frost of May 5, 1877 (so fatal to fruit crops in general), while in low grounds the early blooms suffered severely. Everywhere, during the fruit season, may be seen gangs of women and boys busily engaged in gathering Raspberries, Gooseberries, and Currants. Collectively, they earn large sums of money, good hands making as much as 11s. per day at Gooseberry picking, but the average rate is only about 6s. per day, and that only by means of hard work from light till dark. In Kent Currants and Gooseberries are likewise chiefly grown between orchard trees, but, in some cases, large fields are wholly devoted to them. In the latter case they are planted in rows 6 ft. apart each way, with the exception of Black Currants, which are allowed a little more room. Between the rows, until the trees get too large, a row of Peas is planted; these are chiefly early sorts, which can be picked before very dry weather is expected, and the value of the crop is of such importance that from an acre of ground is often picked 200 bushels. A woman picks in a good season 10 bushels per day, for which she is paid 3s. 4d.

The only kinds of Currants grown are the Black and Red kinds, White ones being very little in request, except for dessert. The trees are in all cases well shaped and open in the centre, and they yearly make luxuriant growth and seldom fail to bear heavy crops. The ground between the rows is kept frequently stirred by the horse hoe, and in the case of Currant bushes growing under orchard trees, of which there are hundreds of acres, many of the rows being half a mile in length, it is impossible for man and horse to work the hoe on account of the branches of the orchard trees; therefore a boy is sent to guide the hoe, and a long rope is attached to it, the end of which is encircled round a wheel placed firmly on the Grass paths that run through the plantation. To this rope a horse is yoked, and by walking straight up the path the hoe is readily drawn up the rows, the wheel, which is of course placed immediately at the end between two rows, keeping the rope in its proper place.

Gooseberries are likewise grown in a similar manner, but the greatest amount is to be seen in open fields in elevated positions. Plenty of space is allowed for the trees to expand. The branches are not shortened back to any great extent, the object being to get the trees as large as possible, and so in-

crease the amount of the crop. One very good arrangement I noticed was standard Pears and Plums placed alternately 20 ft. apart each way, the straight lines between them one way of the field being occupied by a row of Gooseberries. Between these were two other rows of Gooseberries 6 ft. apart, and between these again were rows of Strawberries. When the Gooseberry bushes are large enough they will of course require all the room, and the Strawberries will be done away with. This is, however, a very profitable method of cropping the ground, as it admits of all necessary operations being carried on without injury to either crop. Gathering commences as soon as the berries are at all saleable, and continues until they are ripe. In all cases the bushes are stripped at one picking, as much as 10 acres per week being sometimes cleared, ending with 20 to 30 in proportion as the markets require it; and as a week in favourable weather consists of only four-and-a-half days, the best market being on Saturday (to prepare for which it is necessary to leave off picking at two o'clock on Friday), the quantity of work to be done in a short time is immense; and if wet weather, which bursts the fruit, or intense heat, which scalds it, set in, picking the whole quantity is impossible. Some growers employ during the last two weeks of picking as many as 300 women and children. It only lasts a short time, and one grower told me that he sent to the north of England in two days about 300 bushels of fruit. Women sometimes pick as many as 30 sieves of Gooseberries per day, for which they receive about 10s. 6d. The chief kinds grown are Rough Reds, and a yellow kind which is generally picked when green, and also many others; the red ones are those left to ripen. A smooth green kind is likewise largely cultivated for dessert. Some growers in good seasons have been known to gather more than 3000 bushels of Gooseberries.

Gooseberries and Currants in open plantations are generally placed 6 ft. apart each way, making 1210 plants to the acre. The cost of plants if bought ranges from 8s. to 15s. per 100. Many growers (especially in the case of Black Currants) now plant an intermediate bush, which is taken out again after five or six years. By this plan they get a better return at starting. It is now found much better in Kent to form the young Black Currant into a stool instead of a bush. This is done by not taking off any of the buds when the cuttings are struck. The plant in this way forms a better head, and lasts many more years than it otherwise would do. Bush fruits are sometimes highly remunerative, often yielding from £20 to £30 per acre, and Black Currants, which have increased in demand of late years, have been known to realise as much as £60, minus the expense of marketing, gathering, &c.

RASPBERRIES.—Comparatively few Raspberries find their way into Covent Garden, owing to the large demand for them for preserving, and to immense quantities being contracted for by jam factors long before the fruit is ripe. Raspberries, however, that are sent to market are mostly gathered with their stalks attached, placed in small punnets, which are packed, some fifty together, into wooden boxes, and sent on carts to London from the neighbouring market gardens. Near London, Raspberry culture is carried on in a somewhat careless manner, the plants being principally grown between Apple or Pear trees, and the kind generally grown is the red Antwerp. The ground in which they are planted is heavily manured and trenched previous to being occupied by Raspberries. In the autumn the old canes are removed and the young ones are thinned out, so as to leave three of the best, which latter are shortened back to about 2½ ft. or 3 ft. off the ground, and they are then tied to each other at the top with pieces of tar twine to prevent them being swayed to

and fro by the wind, and also to afford greater facilities for forking over the ground between the rows, which, when done, a good coat of rotted manure is spread round the bases of the plants, in which position they remain undisturbed until the fruit is ripe, excepting that the soil during the spring is frequently hoed to clear it of weeds. Under fruit trees Raspberries succeed tolerably well, but the fruit is seldom so large or well flavoured as that produced on plants grown in open situations, and in the rich warm sandy soils of the county of Kent.

Within twenty miles of the General Post Office southwards, however, there are vast fields entirely devoted to Raspberry culture. The sort most preferred by growers in this locality is Carters' Prolific; its fruit, which is large, is of a deep red colour, a circumstance which renders it worth more money in the market than paler-fruited sorts, and, moreover, it is an abundant cropper, and the fruit ripens nearly all at one time—a great desideratum, as it always pays better to pick and sell at once than to gather at intervals. Raspberries here are planted on thoroughly cleansed land heavily manured; the young plants are obtained from suckers saved from selected stools that have borne the largest crops and the finest fruit. These are cut back to two or three eyes in the autumn, and planted in rows 3 ft. apart, and 6 ft. asunder in the row. For the first three years after planting, Potatoes or Mangolds are in some cases grown between them, but after that if the Raspberries have grown well they require all the room. Three of the strongest suckers are always left for fruit bearing, and these are shortened back to about 3 ft. from the ground, the others being cut away. Late in autumn the ground between the rows is heavily manured and roughly ploughed up, a state in which it is allowed to remain until spring, when it is harrowed down, always choosing a time for the operation when the soil crumbles readily. Neither stakes nor ties of any kind are used, the canes being sufficiently strong to support themselves, and in some plantations of long standing may be found bushy-headed standards with stems about 12 in. or 18 in. high, and as thick as a broom-handle, bearing heavy crops. The ground between the rows is kept rigidly clear, both of weeds and young suckers, with the exception of such canes as are near the old stools. This work is performed by horse hoes, to which is attached a small harrow, which levels the ground and lays the uprooted weeds and suckers on the surface to be dried up by the sun.

Picking usually commences the first week in July and continues until the beginning of August. It is performed by women and children, each of whom carries two baskets of the form of a flower-pot, one in front and one behind, slung over the shoulders; these when full are emptied by boys into wood n tubs provided for the purpose—that is, if the fruit be intended for preserving, but if for Covent Garden baskets are used. As before stated, few Raspberries, however, come to Covent Garden compared with what go direct to fruit-preserving depôts—a fact which will be evident when I state that at Swanley one year a merchant informed me that he was ready to purchase 100 tons of them at £40 per ton for that purpose, although the usual price, it may be observed, is from £20 to £26 per ton. One grower, too, informed me that he had contracted with a manufacturer of preserves to supply him with 10 tons. Few of the Kentish Raspberries are picked with stalks attached to them; most of the fruit seen in Covent Garden furnished with stalks is supplied by growers near London, who pick their finest fruits for the purpose and put them at once in small punnets lined with leaves, which are then packed, in quantities in layers one over the other into large square wooden boxes or chests made expressly for the purpose.

C. W. S.

ANSWERS TO CORRESPONDENTS.

Double Narcissus.—Is the enclosed the Gold and Silver Daffodil mentioned at p. 349 of the last number of THE GARDEN?—G. H. [The flowers enclosed are those of the double white-flowered Narcissus incomparabilis of gardens, a variety regularly known as the Orange Phoenix, and perhaps the most distinct and showy of all the three double forms of the species. Of the other two double kinds, that known as Butter and Eggs has yellow perianth and orange coronal segments, and that known as Sulphur Phoenix has lemon-coloured perianth segments, and yellow coronal ones. The contrast between the white petals and rich orange and strong lobes of the flowers set is strikingly effective. Your plant was called by Haworth *Queltia alba plena, niveo-aurantia*, but it is now, as has been stated, referred to the *N. incomparabilis* of gardens, which is a species quite distinct from the common Daffodil, of which the Silver and Gold Daffodil to which you allude is a double form. The three double-flowered varieties of *N. incomparabilis* are sometimes called Lenten Roses, in allusion to their form and fragrance.—B.]

Flowerless Orchids.—Can you tell me what to do with five Orchids that utterly refuse to flower, viz., *Callia Mossie*, *Lelia purpurata*, *Odontoglossum crispum* and grande, and *Colozyne cristata*? The plants are kept in a small house, chiefly devoted to Begonias and Ferns, the summer temperature averaging 65° during the daytime, and in winter about 60°. The plants seem in good health, are well watered, and regularly syringed. Plants of *Dendrobium nobile* and *Cypripedium insigne* grow and flower well in the same house. Would the plants do better in a Vinery at work? I have tried every method I can hear or think of.—F. M. [No doubt your plants have been too liberally treated throughout the year. Keep them drier during autumn, and give them a lower temperature during winter, and in all probability they will flower hereafter regularly.—W. G.]

Cucumber Insects.—What is the name of the insects that I have sent? They have eaten the young growth out of a Cucumber plant.—SCB. [The box sent only contained one very minute beetle belonging to the Staphylinidae, a species of *Trogophloeus* I sought carefully for any other insects, but found none, although I used a lens to aid in the operation. Insects of this genus are found often in decaying vegetable, about Cucumber frames, &c., but I am not aware of their being in any way injurious to live plants; on the contrary, they are supposed to be among our insect friends, and are looking for animal matter as food, not vegetable. The injury done to the Cucumber plant in question must not be laid to *Trogophloeus corticanus*, which is the insect sent for examination.—N. W.]

Grubs Injurious to Primroses.—The Primroses and Polyanthuses in my garden are becoming exterminated through the enclosed grubs. Will you tell me what insect is the parent of them, so that I may endeavour to destroy them?—WINDERMERE. [The grubs are the larvæ of one or more species of *Otiorynchus*, which are very fond of the roots and stems of Polyanthuses and other species of *Primula*. *Otiorynchus* is a very common insect, and is easily known by its dull brown or black colour, and its habit of burrowing into the soil. It is very common in all soils, and is particularly in those known to be injurious to plants.—N. W.]

Wireworms.—E. A. N.—What you have sent is the perfect insect of *Elatér hemorroidalis*, the produce of one of the common and well-known wireworms. In the larvæ stage it is very injurious to the roots of plants, and the present insect and larvæ should be destroyed wherever found.—N. W.

Double Yellow Furze.—This seems rather difficult to meet with. I shall be glad to know where it can be got in quantity, and whether it is best propagated by layering or division.—E. F. [It is most easily propagated by means of cuttings put in during the autumn.]

Greenhouse Shading.—If "Subscriber" (p. 365) will mix whitening and butter-milk together until the mixture is about the consistency of paint, and apply it to the glass with a brush on the morning of a bright day, four months run will not wash it off.—CAMBRIAN.

Names of Plants.—F. M.—*Dondia Eupipactis*, *P. I.*—*Cupressus macrocarpa* (California). *C. W. C.*—The Narcissus sent are both garden forms, the one a rather large flower of the common double Daffodil (*N. Telamonius plenius*), and the other is the Butter and Eggs *Narcissus*, a double-flowered form of *N. incomparabilis aurantius* (*Queltia aurantiata plena luteo-aurantia*, of Haworth).—B. *E. D.*—1, Form of *Begonia Rex*; 2, *Oncidium sessile*; 3, *Begonia semperflorens*; 4, *Begonia metallica*. *H. Z.*—1, *Rhododendron Dalhousii*; 2, *Begonia crinita*; 3, *Asperula celsitris variegata*. *P. J. N.*—*Fritillaria imperialis lutea*. *C. S.*—*Corydalis cava albidula*, a common border flower. *W. H.*, *Bagshot*.—Your letter contained no enclosure. *W. M. C.*—Send them when in flower; they cannot be named from leaves only.

Questions.

Vine Failures.—My Vines this year, after several years' success, have produced a failure. The sorts are Black Hamburgh, Lady Hamburgh, and Muscat of Alexandria, the shoots of which have appeared only at short intervals, and bear a meagre description of embryo fruit. When the houses were constructed an arch was turned in the front wall, opposite the centre of each light, in communication with an outside wall, and the Vines were trained to the arch, and were planted inside as close as possible to each arch. It occurs to me, from my gardener having accidentally found a mass of roots in the interior, that the main bulk of the roots may have turned inwards instead of passing through the arches into the border, and, as the border has been exhausted, the Vines, which have not been paid, have become unproductive. I should be glad if some of your readers would inform me if my conjecture is right, and that being so, what is my remedy? Would it be advisable to take up the Vines at the fall of the leaf, and endeavour to start them quite within the arches or to cut them at the Vines outside border, admitting the rods into the house through an aperture in the wall? or to procure fresh Vines for outside planting? Could it be possible that the solution used for the destruction of insects, which my gardener last winter applied, had stronger effect on the stems of the Vines than on the insects, so that the character as to affect the vitality of the buds, though at that time in a dormant state?—E. D. T.

Cherry Failures.—I have an orchard filled with Apple, Pear, and Cherry trees, all planted four years ago last February, and they were thriving grandly up to last June, when about the latter part of that month the Cherries began to flag as if they had been blighted, or the roots chopped away. I examined the roots, but could not discover the cause. The strange phenomenon is, that the Apples and Pears by their side are doing well, and are showing plenty of bloom. Perhaps some of your contributors can kindly throw some light on the subject.—SUSSEXIAN, South.

Trees and Shrubs for Wet Ground.—Can you name any shrub or tree (besides Willow) which would thrive in a low-lying and wet field?—CUOK.

EFFECTS OF LOCAL INFLUENCES ON GARDEN CULTURE.

AN attentive perusal of "E. T.'s" remarks (p. 356) convinces me that the causes of his failure in growing even such hardy plants as Fuchsias and Chrysanthemums are to be sought for primarily in the air, and not in either the soil or the water, although these latter must necessarily, to a certain extent, be participators in the general atmospheric contamination. "E. T." very vaguely describes the situation of his estate, as being in Warwickshire, but, as he adds that it is 10 miles from any town, I imagine it is to be found somewhere in the comparatively sparsely populated centre of that county. If so, "E. T." will know better than I can tell him that to the west, north-west, and north of his flower borders and Orchid houses there runs within less than 20 miles a frontier of factories, which, from year's end to year's end, are continually vomiting forth sulphurous, chlorous, arsenical, and other noxious fumes, which, slowly but inevitably, destroy vegetable life of every description. It may seem improbable that these fumes can be carried to so great a distance, but it must be remembered that it is not only the air that plays its part in the matter, but the clouds and especially the smoke, which act as sponges, and suck up these deleterious vapours, to redistribute them in the forms of rain and smuts over many square miles of country. Mr. A. H. Church found a crystalline "message from the sea" in the form of common salt on the windows of the Agricultural College at Cirencester, the sea spray that produced it having been carried to a distance of more than 30 miles, as the crow flies, so "E. T." must not be surprised at receiving unpleasant messages from the belt of manufactories, which are to be found within two-thirds of that distance from his floral favourites. It must also be borne in mind that amounts of plant poison, which are not to be detected by the most refined chemical analysis, are quite sufficient to effect infinite mischief amongst the inhabitants of the vegetable kingdom. There being but little doubt that the air of the locality is in fault, the only remedy for "E. T.'s" failures would appear to be removal to another quarter, except, indeed, he is patient enough to wait until the action of the Noxious Vapours Acts has resulted in the purification of the air of even the Black Country. If "E. T." wishes to learn more about the action of noxious vapours on vegetation, I shall be happy to send him some articles which I wrote recently on the subject in the "Chemical News" if he will send me a post card to THE GARDEN office saying where they will reach him. It would be interesting to know whether "E. T.'s" neighbours fail or succeed in growing flowers in proportion, as they recede from or approach the Black Country.—C. W. QUIN.

The letter of "E. T." (p. 356) submits a most curious and difficult problem for solution. His case is truly a most perplexing one, and without more knowledge of all the circumstances than his letter affords, explicit as a general statement of the case though it be, I am inclined to fear he will not get really valuable help from fellow horticulturists. Less than a century ago his garden would have been set down as bewitched; he might possibly have been charged with all kinds and degrees of moral turpitude; and the aid of a priest with bell and book would probably have been invoked. Has defective ventilation anything to do with the unhealthy state of "E. T.'s" plants? It seems to me a not unlikely cause. Or have the houses been painted with any ingredient which gives off unhealthy fumes? such cases have occurred, and been unsuspected. Would "E. T." state when the condition of things he describes first began; and can he remember whether its incoming was gradual, and what class of plants was first affected? It would be well, too, to state more in detail the condition and appearance of the unhealthy plants. Are young, newly-potted plants more affected than old, well-established plants? or are both affected similarly? Is there any appearance of fungoid growth? Have the tissues been examined microscopically? and has anything abnormal been noticed? Do newly purchased plants suffer like those raised on the premises? In what way are they first affected? Has "E. T." examined the roots of the affected plants, and if so, have they any unusual appearance? Is "E. T." a dabbler in chemistry? and if so, has he analysed the soil used in potting his plants? One more query: Is it possible that any deleterious substance can have been wilfully or negligently mixed with the composts in the potting shed?—ENQUIRE.

I would recommend "E. T." (p. 356), who seeks advice on this subject, to visit some of his neighbours' gardens where the gardening is conducted under general conditions similar to his own, as there can hardly be much difference in this respect within one neighbourhood, and if he finds that they succeed fairly well in growing garden produce he may safely conclude that the fault, in his own case, is in the management; and as he confesses to having dismissed five gardeners, "all men of experience and successful growers," one after the other, before they had more than time to turn themselves round in their new situation, let alone getting acquainted with its

capabilities and peculiarities, he may safely conclude that the mismanagement in question is due to his interference. He should give his gardener a chance and means wherewith to work. If he will follow this advice, he will live, I hope, to note a decided improvement in his garden. It is paradoxical to hear "E. T." describing himself as one having an "extensive knowledge, both practical and theoretical," of plant culture, and as "an accepted authority" on horticulture among his neighbours, and in the next breath telling us that he cannot grow even the commonest plants, and has a garden smothered with bug indoors and out.—CHEF.

It is certainly singular that nothing thrives with "E. T."; it would appear that his practical and theoretical knowledge does not help him much. I should attribute the failure in question to changing the gardeners so often—five in seven years, not quite a year and a half each. What chance has a man under such circumstances to convert failure into success? Let "E. T." give a good man a fair trial for a term of years, give him a chance to master local influences, and then report results. I venture to predict that things will be different.—J. M.

PROPAGATING.

NIGHT-SCENTED STOCK.—This may be readily increased by means of cuttings made of half-ripened wood, as shown in the annexed illustration, and inserted firmly in very sandy soil. August is the best month in which to propagate these stocks, as they then make good plants for early summer decoration. Although, as I have



Cutting of Night-scented Stock.

just stated, this stock is easily propagated, it nevertheless requires care; but if placed in the shady part of a warm greenhouse without any covering it soon emits roots. When the young plants are rooted and beginning to grow, pot them off and keep them on a shelf during the dull months, ready for putting in spring, to flower in May and June.—H. H.

OBITUARY.

WE have to announce with deep regret the death of Mr. W. TILLERY, for forty years gardener at Welbeck—an event which took place on Friday, the 25th ult., aged 73. The severe winter through which we have just passed added very much to the general break-up of his health, which had been noticed by his family for nearly twelve months. He, however, attended to his duties as usual until almost the last; even ten days before his death he walked through the glass-covered wall in which he took so much delight, and was so particular in attending to the ventilation, &c., himself. No persuasion was sufficiently strong to compel him to keep to the house during the bad, cold weather, and it was only on becoming too weak and exhausted that he took to his bed four days before his death. A man so well known and universally respected needs little to be said in his favour; we may, however, add that the gardening world has lost one of its best and brightest members, and THE GARDEN a willing and able contributor.

No. 91.]

SATURDAY, MAY 17, 1879.

Vol. XV.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

FLOWERING SHRUBS AND TREES IN PARKS.

THAT fine old shrub, *Ribes sanguineum*, deserves all that can be said in its favour as a spring-flowering subject; had it been as difficult to grow as the Bougainvillea was at one time supposed to be, it would doubtless have been considered to be a grand plant. The double variety is very much superior to the single-flowered kind, and it also blooms later and lasts longer. It is, indeed, a fine shrub, but, curiously enough, fifty of the single-flowered sorts are planted for one of the double variety, though the latter is an equally free flowerer, and deserves the name of Burning Bush, owing to its glowing crimson colour. We think so much of it here that we have a large stock of it in pots for forcing. When the plant first became known, many years ago, it was, I believe, figured in the "Botanical Magazine" as a particularly fine shrub. The flowers are very double, and of a most intense crimson colour.

Another shrub equally good is the *Pyrus (Malus) floribunda*, which has been truly described as one of the most brilliant of spring-flowering subjects. It flowers in a young state, succeeds the Currants, lasts quite as long in bloom, and thrives in the worst exposures. These two, Paul's Scarlet Thorn, the Lilac, *Rhododendrons*, *Azaleas*, flowering Cherries, purple and yellow *Laburnums*, *Deutzia crenata* and *scabra*, *Honeysuckles*, *Spiræa Lindleyana* (a far hardier shrub than most people imagine), and other subjects that flower in spring and summer, should be planted far more extensively about our parks and the margins of woods than they are. All those named are hardy enough, and there is no doubt about their thriving in the north or south. The fault of park planting hitherto is the paucity of flowering shrubs, which, when they are used, are usually planted far too thinly to be effective, or they are planted in the wrong place, or under the shade of trees where they do not grow or flower freely. It is not a good plan to introduce too much of the flower garden into the park or woods. Too much dressiness in such places is objectionable, but there is certainly room for a far more extensive display of flowering shrubs and trees than there is, as from many woods near mansions they are almost entirely absent. *Rhododendrons* have been pretty extensively planted on many estates, but their display is but short-lived, and there is no reason why such plantations should not be far more varied than they are, containing, as they do, subjects that will extend the display every season over a much longer period. It is necessary, however, that all such subjects should have room and light. They may be planted thickly at first, and with advantage in the way of shelter, but when they get crowded they should be thinned freely, and the plantations extended with those removed. No landscape gardener, as the term goes, seems yet to have grasped a conception of what might be accomplished by the free use of our large and small-flowering trees on an extensive scale, and associated judiciously with evergreen and deciduous trees of handsome outline and foliage.

A narrow line of *Rhododendrons* along each side of a Grass drive or carriage road, with tall forest trees encroaching overhead, perhaps, is but a poor attempt at this kind of decoration, when by the simple process of expansion and throwing back the lines, a tortuous track, where nothing could be seen to advantage, might be transformed into a broad vale glowing with colour and adorned with the stateliest vegetation. The broad Grass avenue at Kew, which is, or was, bordered on each side by a double row of *Deodars*, we have often thought was marred thereby, and the opportunity of carrying the idea out on broader or more natural lines thrown away. It was not necessary that such an avenue should be perfectly straight on each side, or that it should be hedged in by a fence, the purpose of which is neither to hide anything, nor to preserve anything so far as any one can see; but Kew is by no means the only example that might be adduced for the purpose of showing the fallacy of that kind of planting. J. S. W.

Hardiness of the Camellia.—This is now proved beyond a doubt. From the Isle of Wight on one hand, and Belvoir on the other, come reports to the effect that the *Camellia* has proved to be one of the hardiest of outdoor shrubs, a result quite in accordance with an observation made to me at Southampton several years ago by a lady, whose experience of the *Camellia* in the open air is large, viz., that it is harder than the *Laurel* or any of its varieties. At

the Rectory Gardens, North Stoneham, near Southampton, the residence of that centenarian gardener, the Rev. Canon Beadon, huge *Camellias* have been grown for years on the garden walls, but there shelter is given during the blooming time. At Glen Eyre, which is within three miles, but is higher, not the least shelter is given, or ever has been. North Stoneham Rectory lies near the river Itchen; and it is pleaded that there the atmosphere is charged to a greater extent with moisture than at Glen Eyre, and that during the prevalence of white frosts some protection at night is necessary. Whether this plea may be correct or not, at least it is proved that on elevated places, where the soil is porous and the air fairly dry, no protection has been needed. So many thousands of good *Camellia* plants have been starved and killed in pots and tubs under glass, that its outdoor cultivation is well worth attention.—A. D.

Trees and Shrubs for Wet Ground (p. 385).—I know of nothing more profitable to grow, or that will succeed better in wet land, than the Alder. When once the plants become established, it is astonishing how quickly after being cut down they start again and yield fine poles, that is, if protected from the attacks of game, such as hares and rabbits, which are fond of nibbling the young shoots as they start into growth. Next to Alders in point of profit and suitability for wet land stands the Ash, the wood of which always meets with a quick and ready sale. Elm, too, does well where it can get plenty of moisture at the roots, and it is only when so favoured that it keeps healthy for any length of time, or acquires much size; when sound and large Elm trees are valuable. By planting the two last-named at wide intervals, the Alder will be found to do well between them, and come in as a sort of undergrowth, an arrangement by which there would not be many years to wait before the ground would yield some return. If any shrubs or plants are wanted by way of ornament, the common *Rhododendron*, *Bambusa Metake*, *Arundo Donax*, and a few plants of *Pampas Grass* might be used, and if judiciously arranged would form quite an interesting plantation. Evergreen Oaks interspersed here and there, and some of the *Conifers*, such as the Austrian Pine, *Pinus Laricio*, and *Abies Douglasi*, would also have a good effect, but if the land be very wet, it may be necessary to plant these on raised mounds.—S. D.

Reviving Young Trees.—When young trees have been out of the ground a few days, either in transit from the nursery or otherwise, and not properly cared for, the bark becomes shrunken, and although the roots may be in tolerably good condition, there is great danger that the tree may die after it is planted. Especially is this the case with Peach trees. This may be prevented by burying the whole tree a few days. To do this, dig a trench as wide as the tree is high, and about 8 in. deep at one end and 16 in. deep at the other, and long enough to hold all the trees to be buried, when laid in the trench five or six trees on the top of one another. Lay the trees in the trench with the roots at the deep end of it, laying them straight and packing them close together, but do not pile them up above the level of the ground. Now cover the trees, tops, and roots 12 in. to 15 in. with earth. If the ground be very dry, a few buckets of water should be slowly sprinkled over the earth after the trees are buried. In four or five days they must be taken out and transplanted immediately, being careful to cut back the tops. I have known trees thus buried when taken from the pit to look as fresh as when dug at the nursery, and with proper care never knew one of them to die.—"Country Gentleman."

Magnolia conspicua.—This beautiful flowering tree which looks so well in the form of a single specimen on Grass, with its branches bending under a load of pure white blossoms, is at length unfolding its petals, and will soon be in full beauty. I look upon the time of flowering of this tree as a pretty good criterion of the general backwardness of the season, as I have on many occasions used its flowers for Easter decorations, a time when white flowers are in such great demand. This year, however, the buds scarcely showed signs of swelling at Easter; therefore this *Magnolia* is quite a month later than usual. Nevertheless, the blossoms promise to be abundant, and their lateness has saved them from getting injured by the late spring frosts that have prevailed with such persistency this spring.—J. Groom, *Linton Park, Maidstone.*

Pacific Coast Conifera.—Messrs. Hoopes Bros. and Thomas, West Chester, Penn., say that nearly all the *Pacific Coast Coniferae* described in previous issues of their catalogue have been found unreliable for the Atlantic States; also, that they have had success in sending live plants to Mexico, Australia, the West Indies, and various European countries.

Amygdalus nana.—This has much to recommend it, as it is very early flowering and very dwarf in habit, rarely exceeding 3 ft. The colour of the flowers is deep rose, and they are produced in great profusion. For planting near the margins of shrubberies it is admirably adapted, and deserves to be better known.—W.

The Rose Show of the Royal Horticultural Society, which was announced to be held on June 24, has, owing to the lateness of the season, been postponed to July 8. Mr. Wm. Paul and Mr. Charles Turner intend having special exhibitions in connection with the show, and a display of Roses of unusual magnitude is anticipated. The Pelargonium Society's Show is also postponed, and will be held at South Kensington in conjunction with the Rose show.

Calochortus lilacinus.—This beautiful and rare bulbous plant we noticed in flower a few days since at Mr. Joad's garden, Wimbledon Park. In colour and form it is similar to *C. splendens*, but is smaller in all its parts. It is very free flowering, and the delicate lilac tint of its blossoms is very attractive. It is synonymous with the plant figured in the "Botanical Magazine" (t. 5804) as *C. uniflorus*, but which is a distinct species. It is also known as *C. umbellatus*.—W. G.

Anthurium Scherzerianum at Chelsea.—Numerous specimens of this gorgeous stove plant are now in full beauty at Messrs. Veitch & Son's nursery, and form a very brilliant spectacle. Amongst them are several varieties differing in brightness of colour and size, which varies from the immense spathes of Ward's variety to the small-sized ones borne by the originally introduced plant, thus plainly illustrating the good results achieved by skilful cultivation. The form with two unequal spathes is very interesting, and the white-spathed form is also very desirable for the sake of variety.

Muscari paradoxum.—This new Muscari is so distinct from any other cultivated kind, that it is especially noteworthy. It grows about 1 ft. high, with three erect leaves, nearly 1 in. wide, and deeply channelled. The flower-stem, which is stout and from 6 in. to 9 in. high, is terminated by a conical raceme of densely arranged oblong flowers, of a blue-black tint, faintly perfumed. It is a native of the Caucasus, whence it was sent a year or two since by Dr. Regel, of St. Petersburg, to the Kew collection, where it is now in fine flowering condition.—W. G.

The Double-flowered Caltha (*C. palustris* fl. pl.).—One of the brightest ornaments among hardy plants at this season is this handsome marsh plant. Its numerous compact golden heads of blossoms are very effective, rising above the rich deep green of the foliage. In the bog garden or other moist places, or even in the ordinary border, it thrives admirably, and is decidedly superior to the single-flowered ordinary kind.

Dendrobium luteiflorum var. Freemani.—An importation of this fine variety of *D. luteiflorum* was offered for sale the other day at Stevens'. Amongst the plants thus offered some were in flower, and afforded ample proof of the high merits of this variety. We hear that the remainder of Mr. Freeman's importation has been entrusted to Mr. Howard, of Southgate, for disposal.

Erysimum pumilum.—One of the prettiest of Alpine gems at this season is this pigmy Crucifer, which now enlivens the rocky borders at Kew. Its height is not more than 2 in. It has a spreading habit, and is studded thickly with clear yellow blossoms, which are rather large for the size of the plant. As it is so easily grown, and may be freely propagated by means of seeds, &c., it should adorn every rockery or select border.

Veronica Hulseana.—Too much can scarcely be said in praise of this beautiful New Zealand Speedwell as a greenhouse plant. It grows from 1 ft. to 2 ft. high, and produces delicate lavender-tinted blossoms in great profusion in the shape of long, terminal, branching racemes. As a pot plant or for planting out in sheltered positions during summer it is highly desirable, and certainly deserves to be better known than it is.—W.

Waterer's Rhododendron Exhibition.—Mr. John Waterer's show of Rhododendrons—always one of the most interesting of London floral exhibitions—will be held during June next, in the gardens of Cadogan Place, Sloane Street. A large tent has already been erected there for the reception of the plants.

Cattleya Alexandree.—This is the name of a very beautiful variety of the *C. Mossia* type, which we saw lately in Mr. Bull's nursery at Chelsea. The blossoms, which are pure white, have a delicate blotch of a magenta tint on the elegantly crisped lip.

Tulipa Kolkowskyana.—This new hardy plant may now be seen in flower at Kew. Its general aspect at once reminds one of our indigenous species *T. sylvestris*, as it grows to about the same height, and the flowers, which have narrow yellow segments, are about the same size. Probably when it becomes more fully developed it will present a more distinct character and make a pretty border flower.

DR. ISAAC BALFOUR, of Edinburgh, has been appointed to the chair of Botany in Glasgow University.

Gentiana verna.—In the nursery of Messrs. E. G. Henderson and Sons, St. John's Wood, a large number of this, one of the loveliest gems of the European Alps, grown in pots and flowering abundantly, is now a sight worth seeing, as it is a sheet of the deepest sky-blue. It also affords sufficient proof that it may be successfully grown in pots, provided there is no lack of moisture during summer.

Hose-in-Hose Polyanthus.—We have received from Mr. Dean, Bedford, near Hounslow, some charming examples of these interesting spring flowers. When seen in masses, the double corolla gives a depth of colour which similar masses of the single kinds do not possess.

Camellias in Kent.—Mr. Marnock has sent us some beautiful blooms from Camellias growing in the open air in his garden near Tunbridge Wells. They are as large and fine as blooms cut from plants indoors, and the foliage even more robust and glossy.

THE FLOWER GARDEN.

The Two-spiked Aponogeton (*A. distachyon*).—One of the most interesting sights in open-air gardens at this season of the year is a tank or lake studded profusely with the pure white blossoms of this plant floating upon a mass of emerald green foliage;



The Cape Pondweed in an English Ditch.

its chaste beauty, too, is much enhanced by the delicious Hawthorn-like perfume which pervades the atmosphere wherever this aquatic grows. Such a sight may now be seen in Mr. Parker's nursery at Tooting, where myriads of its blossoms are just in perfection, and have been so for some time past. As to its hardiness, there can now be no doubt, as the plants in question have not received the slightest protection during the severe winter which we have just passed. It evidently thrives best in a running stream, but it may be grown successfully even in a tank of stagnant water, provided it be replenished frequently. For growing in indoor aquaria it is no less desirable, as it flowers very freely, but in that case one plant alone will be sufficient, as the scent of the blossoms from more than one would be overpowering. We noticed the other day, in Mr. Ware's nursery at Tottenham, several flowers with a decided bluish tint, which, if permanent, will render the variety a charming acquisition for association with the type.—W. G.

HARDY OUT-DOOR PLANTS.

DURING the last six days we have had a low temperature, and three nights from 2° to 4° of frost, still we have a fair show of flowers in pots (plunged outside), and on rockeries *Androsace villosa*, *A. carnea*, and *A. Vitaliana* are in bloom. The walls are enlivened by the new growths of variegated Ives and *Jasminum nudiflorum*. A large yellow Pansy, 2 in. across, has kept us company all the winter through, when the snow did not cover it; and the same may be said of those fine varieties of Daisies, Sweep and Bride. It is worthy of mention, that some Hyacinths grown in pots, and forced in February and March, 1877, were put in at the base of a small rockery having a south aspect; last spring they only made strong healthy foliage, but now they are finely in bloom. *Aubrietas* are just now beautiful, and *Gentiana acaulis* is better than we have had it before; perhaps because I had it all moved to the dampest positions on rockeries which I could find. With some of the finest double white and sulphur Primroses before me, I feel at a loss to know why they are not often seen than they are in gardens. They

are faithful to us under all circumstances, and what can be finer than patches of common Primrose, 4 ft. in diameter, under the yet bare trees. Hardy Fuchsias (so called) and some of the ornamental Grasses are killed wholesale: *Aralia Sieboldii* and its variegated kind have stood, losing only some foliage; the same may be said of Sweet Bay. Common Laurel, Laurustinus, and Fire-thorn have suffered very much, but are now reviving. The new round-leaved Laurel has stood the winter much better than the common one even in a worse position. Several varieties of Hydrangea have also braved it well, the kind with nearly all white foliage included. Tulips not taken up for two seasons are grand. *Primula cortusoides* and *P. c. amena alba* are full of blooms yet to open. I had six varieties of the shrubby Veronicas, and all but one are gone; I fear I have also lost *Ramondia pyrenaica*, *Oxalis rosea*, *Achillea Clavenna*, *Papaver croceum*, *Lippia nodiflora*, and *Anthyllus Vulneraria*. *Solanums* are cut to the ground; *Aucubas* and *Hollies* never looked better and are full of bloom. Just now *Epimeediums*, *Daphne Cneorum*, and *Corydalis bulbosa* are cheerful subjects. *Arabis rosea* shows in grand contrast with the white-flowered kinds. *Orchises* are yet out of sight; these, I fear, are too dry and too much exposed to the sun on our south rockery; they did not look healthy all last summer. *Meconopsis nepalensis* has suffered very much; I hope that it is not now being finished off by the powerful mid-day sunshine. *Catalpas* have all suffered severely, but, reverting to our little favourites, I have a treat in *Adonis nivalis* and *Alpine Auriculas*, the latter raised from seed sown more than a year ago. Many blooms are larger than half-crowns, and the colours are superb. I grow them in frames, which, I believe, have never been entirely closed throughout the winter.

J. WOOD.

Woodville, Kirkcaldy.

SPRING FLOWER GARDENING.

SELDOM has a season more adverse as regards a display of spring flowers been experienced than the present; and where summer gardening has to be carried on in the same beds many of the ordinary earliest flowering plants will scarcely have reached their full bloom before they must be cleared off to make room for their successors. This part of Kent is generally considered to possess a mild climate, and early flowers would certainly be as forward here as in most parts of the kingdom; yet I must confess that, as far as spring flowers are concerned, the majority of them are a failure. The only ones that have been really satisfactory are those which have been planted in sheltered beds, banks, or borders, where the friendly shelter of overhanging branches has mitigated the force of frost and wind. We have had as fine a display of *Aconites*, *Snowdrops*, *Primroses*, *Daffodils*, and similar flowers as any one could desire, where they are naturalised in masses principally under trees where the turf is thin, and where little mowing is needed; but as regards the same class of plants in open freshly-dug beds, they have been so late and so weatherbeaten as to be scarcely presentable at any time. Under such uncertain conditions of climate, our future attempts at winter and spring bedding must eventually, I think, come to be confined to fine foliated plants more than flowers, for, beautiful as beds of forget-me-not now are, they are scarcely more attractive during winter than masses of bare earth. But when a good selection of dwarf shrubs, or trees in a young state, such as many of the Conifers are contrasted as to colour, habit, &c., and the soil is carpeted with spring flowers, a pleasing effect is produced the whole season through. There is no need for experimenting with half-hardy plants, as the best shrubs for the purpose, viz., *Retinosporas*, *Cypresses*, *Aucubas*, *Berberis*, &c., are as hardy as any plants which we possess, and the flowering plants which we employ should only consist of those that are in full bloom before May, even in the latest seasons, otherwise they should be placed in the list of early summer flowers. For this reason bulbs, such as *Crocuses*, early Tulips, and *Hyacinths*, should be freely planted, and the earliest varieties of *Pansies*, *Arabis*, *Aubrietias*, and similar trustworthy early-flowering plants that give a bright look to the beds early in the season should only be deemed admissible for the spring flower garden. Of course in any mixed arrangement that has not to be cleared off at a given time, a much larger variety of plants would be eligible, as when the mode of arrangement allows of a gradual blending of the seasons by moving any plant that has completed its allotted time and replacing it by one coming into bloom simultaneously, and when, in a season like the present, the flowering of spring plants comes on the heels of those of early summer, a blank is made that upsets the whole effect. We cannot alter the seasons or the effect which they have on vegetation; therefore the wisest course would be to prepare beforehand for severe winters by only planting frost-proof subjects, the variety of which available is sufficient to satisfy the most extensive wants that are likely to arise.

Linton.

J. GROOM.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Bedding Violas.—I regret to find that the few remarks which I made (p. 369) upon these beautiful spring and summer-bedding plants should have called forth such a discordant note as that which has emanated from "Cambrian." I gave my experience of these Violas here in the south; he, his knowledge of them under circumstances very dissimilar, and it is unfair to assume that, because certain kinds may not be good in his locality, they are not good elsewhere. At the Chiswick trial of Violas, conducted for three years in succession, Yellow Boy proved to be the earliest of all the yellow kinds, beating all the northern varieties which were there. Of the two kinds named, *Ilacina* and *rubra Ilacina*, both of which "Cambrian" deprecates, I find that both were awarded first-class certificates at Chiswick, where they were exceedingly beautiful, and they are the same here every summer; both furnish hues of colour produced by no other Violas. The Tory mentioned by "Cambrian" does not class with the purple self kinds to which *Cliveden Purple* and *Mulberry* belong; it is of a bluish-purple hue, and is very good in its way, but it is not one of the so-called purple section; nor is it blue, and in this respect it compares badly with *Blue Bell*, *Blue King*, *Blue Beard*, and others. *Holyrood* is a large, massive flower, of an indigo-blue hue, and is better suited for classing with show self *Pansies* than with bedding kinds, at least, such is its character here. The most popular and most widely-grown Viola is *Blue Bell*, and for constancy it has never been excelled. I send a few blooms of the kinds just named, including the Tory and a beautiful yellow self, quite new, named *Queen of Spring*, sent out by Mr. Vertigans, of Birmingham.—A. DEAN. [The blooms received from Mr. Dean were clear and decided in colour and very beautiful. The blues and purples fully confirmed all he has stated respecting them, and nothing could possibly be brighter or more charming than some of the yellows or better as regards substance.]

Wallflowers in Market Gardens.—We have had two bad winters in succession for the blood-red Wallflower so largely grown for market use. Last year late spring frosts so crippled the plants that they died wholesale, and the worst crop of seed on record was the result; where ponds were looked for half ounces only were obtained, and, as a consequence, the price has gone up enormously. A large grower here saved enough last summer, and only just enough for his own sowing this spring. Early sowing on generally a fine day in January is the rule, and it has followed that the seed either did not germinate, or that the plants have disappeared under the combined effects of cold and vermin. This cultivator and his neighbours had hitherto sold and bought seed from each other at about 6s. per lb., but none had any to spare. He therefore applied to other seedsmen for seed of a good stock, and was informed that he would be charged 2s. 6d. per oz., or at the rate of 40s. per lb., and so scarce are good strains that this is now but a fair price. This spring, in addition to the difficulty in raising seeds, the grower finds that large numbers of the plants have been killed, old or very early-planted ones wholesale, and that the market for the flowers, owing to their having burst out all at once, is a dull one. Looking to the high price of seed, and the low prices commanded by the flowers, larger breadths will be saved for seed this year, and therefore next spring the price may be about an average one. I observe that in one or two gardens considerable breadths of the new rose-purple kind of Continental origin are being grown, and that they look exceedingly effective, but whether they will fetch good prices or not remains to be seen. Market folks are eminently conservative in their likings, and it is exceedingly difficult to get any good new plant into a remunerative sale.—A. D.

Crown Imperials.—Permit me to thank "H. P." (p. 369) for his kind invitation. I hope to see him some day, and am anticipating much pleasure and profit from the interview. But he has mistaken the object I had in view; I had no thought of self-glorification, and the allusion to the number of flowers and the height of the stems, was merely to show how beautiful *Crown Imperials* are with only ordinary border treatment; indeed, I found, on looking closer at the groups, that I had understated both their height and the number of flowers which they bore. But my sole motive was to recommend their culture, as I find, from questions frequently asked, that scarcely one person in a dozen even knows what they are; and yet there are but few plants when in flower that produce a greater impression upon all who see them.—E. HODGKIN.

Hardy Japan Primulas.—I observe that Mr. Douglas discourages the planting of the varieties of *Primula amena* in the open ground, as the flowers and leaves are fragile and liable to be injured by winds. It is worthy of note, however, that these plants are perfectly hardy, a quantity here of various kinds having been exposed in pots all the winter without protection of any kind, and not one has been injured, although in some cases the pots were split all to

pieces. As to suitability for planting out, it is also worthy of remark that when planted out they produce leaves and flowers much later than when grown under glass; the flower-stems are shorter and stouter, and the plant accommodates itself better to its position than it would do under different circumstances. Planted in sheltered spots and in nooks on rockwork, clumps of these *Primulas* would prove extremely beautiful during the month of May.—A. D.

Hardiness of the Variegated New Zealand Flax.—Amongst cultivated plants we from time to time meet with exceptional instances in individuals that on account of their hardiness, or other properties, stand in direct opposition to our preconceived opinions formed upon data generally reliable. Variegation, be it disease in the strict sense of the term, as some maintain, or, otherwise as held by those who point to the continued vitality exhibited by many of the longest known examples existent amongst cultivated subjects in this state, is still usually found to bear with it a weakened condition of the plant so affected that shows itself in some way or other, often through less endurance of the leaves proportionate with the more or less absence of green colour present. The plant under notice (*Phormium tenax*) in its normal and variegated state has this winter stood out of doors in many places, and has afforded conclusive evidence that in its case variegation is not accompanied with an enfeebled condition; for, in every instance of which I have heard, the variegated form has withstood the winter better than the green one. It is gratifying to learn that this stately plant in any form can, with slight protection, be enabled to bear a hard winter, if only in the more southern parts of the kingdom. And the fact of its being hardier in the variegated than in the green state opens up further ground for considering the interesting subject of variegation in general.—T. BAINES.

New Allium.—A very handsome addition to our list of hardy bulbous plants is *A. Erdeli*, figured in the current issue of the "Botanical Magazine" (t. 6426). It is dwarf in habit, being not more than 9 in. high when fully grown. The leaves are broad and glaucous, and produced in a rosette on the surface of the ground. The flower-stem, which is stout, is terminated by a dense head of blossom, about 1 in. across, toothed at the edges, and pure white in colour, which contrasts admirably with the bright claret-purple tint of the centre and pale yellow anthers. It is a native of Palestine, extending along the Lebanon range to Jerusalem. It is perfectly hardy and of the easiest culture. It may be propagated by means of numerous small bulbils which detach themselves annually from the mature bulbs.—W. G.

Chrysanthemums.—To grow these really well in borders, they should never stand longer than a year without being renewed or replanted, and instead of a large number of stems being allowed to start up together, they should be limited to three or four at most. Being naturally of a gross-feeding nature, it is necessary that the ground where they are to be planted be deeply trenched.—G.

RANUNCULUS LYALLI.

At last this long-heard-of plant, known as the "Water Lily of the Shepherds, of New Zealand," has flowered and been exhibited for the first time in Europe, the honour of doing which belongs to Messrs. Veitch, who exhibited it in a flowering state at the Royal Horticultural Society's meeting on Tuesday last, having successfully

imported it in quantity through Mr. Peter Veitch, to whom our collections are indebted for so many rare and beautiful acquisitions. As a species, it is allied to the very few which are characterised by their shield-like leaves of leathery texture and by erect stems, the blossoms being white or cream-coloured. The Chelsea specimens are necessarily in an immature state of development, and in their present condition they considerably resemble *Nelumbium* specimens in miniature, except that the flowers are of the purest white, with a central tuft of golden-yellow stamens, which much enhance their chaste beauty. Its native habitat is in moist places in the Southern Alps of the Middle Island, where it is said to attain a great size, the leaves measuring 15 in. in diameter, and the flowers 4 in. across. As it is found at considerable elevations, we may presume it is quite hardy in our climate, and now that such satisfactory success has attended its culture, after so many repeated attempts at various times to grow it, we hope that such a desirable acquisition will never hereafter be lost to our gardens.

W. G.

Hellebores in Pots.—Although these will grow almost anywhere, or in any soil and situation, nothing pays better for a little care and attention at starting; and the plants are of such an exceedingly useful character as to be quite deserving whatever labour may be expended on them, for it may truly be said of the Christmas Rose when well grown, that you may "cut and come again," and the flowers are of that lasting, enduring nature as to be almost unrivalled by any other. Their value, as pot plants for window or greenhouse decoration, is scarcely second to any at the season they come in; this is a purpose for which they are deserving a much more extended cultivation than they now receive, as they may be

lifted from the ground towards the end of November, and placed away anywhere in a cold frame till they get into bloom. For patches to stand permanently there is no better place than the margins of *Rhododendron* beds, as there the soil is of that description as to suit their wants, and they can remain without disturbance, and be much better circumstanced than they would be in mixed beds or borders. Till I obtained a few plants of *H. niger maximus*, I was under the impression that the Christmas Rose was a slow plant to propagate; but I have not found it so with that variety, as in the space of a little over a year I have got quite a stock, and this might now be considerably increased. I note that numbers of seedlings have been raised, but as yet I have been unable to get a single pod, although I have tried artificial fertilisation.—D.



The "Water Lily of the New Zealand Shepherds" (*Ranunculus Lyalli*).
As exhibited by Messrs. Veitch & Sons at South Kensington on the 15th inst.

THE KITCHEN GARDEN.

Spring Crops and Slugs.—The present spring has proved that hard winters are not destructive to slugs. Our land is as badly infested with them as it was last season, and some hundreds of young Lettuce plants have been sacrificed by them this spring. The best remedy we have tried for protecting seeds from slugs is sawdust; nothing baffles them like this laid on the beds about 1 in. thick; no slug will pass over it, and it is nearly equal to Cocoa-fibre as regards warmth and conservative power. With the bitter experience of the present spring, it behoves all who have frames at their command to make free use of them for sowing and forwarding all kinds of vegetable crops that will bear transplanting; by doing so we have, at the present time, thousands of strong plants nearly fit for going into their permanent quarters.—J. ROBERTS, *Gunnersbury*.

The Broccoli Crop.—Broccoli heads this year are small, and, as a consequence, plants that have been so far spared by the severe winter will produce but a poor crop. Market growers who were persuading themselves that at least they would have some good Broccoli to send to market are now discovering that the heads are mere buttons, and, in cutting, find that the centre or pith of the stems is blackened and destroyed. This is inevitable when hard winters prevail, and it serves to illustrate the vicissitudes to which market gardening is subject. The early spring was full of hope, but this the past two months have blighted. Nothing grows, and seedlings are fast vanishing from sight.—A. D.

Dry Fern and Straw for Protecting.—During the past winter the weather has been of such a character, as to prove what is the best materials for protecting purposes. Early in December last I covered some rows of Celery; half of them was covered with dry Fern, and half with dry, long litter fresh from the stable, and when we came to dig the Celery, that which was protected with Fern had scarcely a bad stick, while that which was protected by Straw was two parts out of three rotten, all being side by side planted at the same time and the same sort, namely, Sulham Prize Pink. This I find to be a good Celery.—J. C.

Orange Jelly Turnips.—The past winter has tried Turnips as well as other things, especially those that were sown late to stand through the winter for use in spring. I sowed three sorts, Early Six Weeks, Snowball, and Orange Jelly; the last has proved much the hardiest. While the two first got cut badly and many rotted, this stood uninjured, although sown side by side and at the same time. Some do not like it because of its yellow look when cooked, but that is no detriment. I would recommend all who have not grown it to give it a trial.—J. C., *Farnborough*.

The Witloof.—This is not a new vegetable, but although extremely common in many parts of the Continent it is scarcely known in this country; it is a plant of the easiest cultivation. Sow in rows 1 ft. apart, about the middle of this month, not earlier, as it is very apt to run to seed; thin out the plants to 8 in. apart in the rows, keep the ground well hoed and clean throughout the growing season; between the rows give at stated intervals good soakings of liquid manure. When the plant is in vigorous growth take up a few when required, cutting off the green tops. As winter approaches, place three to six roots in a large pot, filling it up with mould, and with a smaller sized pot cover it up closely to prevent light from getting in, and place the pot in heat, or in a warm cellar. In about three weeks it will have produced fine tender-leaved heads of a pale yellow colour, equally good to be eaten as a salad or boiled.—B.

EFFECTS OF THE WINTER IN ANTRIM.

I HAVE read with interest "O's" account (p. 370) of the effects of the winter in the south-east of Ireland; perhaps I may be permitted to add a little from the north-west. Contrary to "O's" we have here for the most part a soil inclined to be heavy, and almost wholly resting on limestone, of which there are extensive quarries close to us. Like others, we have lost many plants on walls; the blue Passion-flower (*Passiflora cærulea*) on southern and other aspects is entirely killed. Escallonia macrantha, Leycesteria formosa, and Magnolia grandiflora are killed to the ground, but will mostly push again from the bottom. Three years ago I planted out in a sheltered nook a good sized plant of the Magnolia from a pot; it grew well until last winter, when it succumbed. Shrubby Veronicas, Sweet Bays, Laurustinus, White Broom, a hedge of Berberis Darwini, large clumps of Pampas Grass and Tritoma Uvaria, are all killed outright, except the last-named, which may push again from the roots. Many branches of the common Laurel are killed, especially where they formed an arbour over walks; no doubt the result of cold draughts. Wellingtonias, Taxodiums, and others are badly hurt. In

mixed borders all Antirrhinums, Stocks, and most of the Wallflowers are gone; of the latter Belvoir Castle has stood the best. Beds of Primula japonica (with some I have heard not quite hardy) have stood here with impunity, and are now showing flower strongly. The kitchen garden suffered severely. Broccoli, consisting of such hardy sorts as Alexandra, Cattell's Eclipse, &c., Savoys, Winter Greens, Parsley, and Sage, were killed; the only vegetable which survived here was Brussels Sprouts. All through the spring the weather has been of the most adverse character, and, I fear, will prove injurious to tender wall fruit. We have had an excellent bloom on Peaches and Nectarines here on south walls, but, unfortunately, at that time, we had nightly 10° and 12° of frost, and now Plums, Cherries, and Pears on warm walls are as white as snow, the two former past their best as regards blossom. It will be the end of the month and into June ere standards of the same and Apples will expand their blossoms. S. K.

Templepatrick.

Shelter for Fruit Trees.—This is a subject that deserves serious consideration from all who contemplate forming new plantations of fruit trees, and "A. D." (p. 335) has done good service in directing attention to it. Several instances came under my notice last summer, where excellent crops of fruit were had from Apples, Pears, and Plums, which were clearly traceable to the excellent shelter that surrounded the trees.—J. K., *Gunnersbury*.

GARDEN DESTROYERS.

The Vine Weevil.—Having been much pestered with this weevil, I was much interested in reading such a full description of its habits as that which appeared in THE GARDEN a short time since, and as it is considered so difficult to exterminate, it may be of use to others if I mention how we deal with it here. The place most infested was a Vinery, where the larvæ did great damage to the roots of the Vines, but, having to make a fresh border, they were cleared out with the soil, and by watching closely for any feeding by night we have been pretty free from them since. Last year by some means or other a few of the beetles found their way into a large Peach house, where they began feasting on the leaves, but by placing a white cloth under the trellis and giving the trees a shake we soon got rid of them. Although others have just lately made their appearance, these are very minute, having evidently just changed from the larva state, and by laying the disburbed shoots in small heaps on the set-off of the back wall, they get under, where they are found in the morning and quickly despatched. By following them up in this way before they are old enough to breed, I do not anticipate any further trouble with them, and if others who have them will adopt the same means to entrap them, I have no doubt that they will soon effect an entire clearance, as I am hopeful we have now done.—S. D.

Sparrows and Primrose Bloom.—Sparrows have picked off the blossoms of Primroses this spring by thousands; they do not eat them, but leave them lying on the ground as if cut off with a pair of scissors. I find, too, that sparrows have been visiting the Gooseberry and Currant bushes in some orchards, destroying the flowers in the same manner as those of the Primroses. The inclement season, I presume, has made their ordinary food scarce, and therefore they attack the first eatable substitute that presents itself; at all events I do not remember such wholesale destruction of Primrose blooms before.—J. GROOM.

The Goat Moth.—I notice a misprint in the article which I sent you on this moth in Vol. XIV. (p. 386); the word "salt" is used instead of "soot." Kindly make this correction. Salt may do harm.—R. M.

A Good Use for Old Logs.—With very little trouble hollow logs can be made to serve a good purpose in the rustic decoration of lawns. A section of a hollow tree, from 1 ft. to 2 ft. in diameter, with a solid rim from 2 in. to 4 in. thick, when cut to a length of about 2 ft., set upon end in any desirable spot and filled with good soil, makes a good receptacle for either seeds or plants. Should a larger surface for planting be required a section may easily be cut 6 ft. or 8 ft. in length, and divided lengthwise some distance above the centre. Then strips may be nailed across the ends of the larger part, and the hollow filled up with earth, and planted with Potatoes and Verbenas, or a strip through the centre may be devoted to low-growing annuals, and the sides and ends to trailing plants. Leave the bark on, and in the split section bore small holes in the bottom for drainage. When plants in these are well established they are very ornamental.—"Rural New Yorker."

GARDENING FOR THE WEEK.

Flower Garden.

Auriculas.—Owing to our keeping the frames a little closer than we have been doing, and removing some of the pots into a warmer house, we have been a little earlier than we otherwise would have been in getting the blooms open, and the continued cold weather has retarded the later sorts so much that we have a good bloom yet. Out-of-doors the finer varieties of the Alpine section are now at their very best; the colours are more brilliant than those under glass, and varieties that have shaded edges under glass are not shaded in the open air; this is not invariably the case, but it is so with some sorts. These hardy Auriculas are not much injured by the weather, and have certainly an exceedingly fine effect amongst Primroses, Anemones, Muscari, spring-flowering Saxifrages, and other plants that are in blossom early in May. Most of the growers are now busy repotting, and directions have been given in previous numbers as to the method of procedure. After repotting the frame should be kept close for a few days, and the plants must be shaded from bright sunshine; the offsets must be kept quite close, especially such as have no roots. I generally place them under a handlight, and then place small bell-glasses over them to keep out the air.

Carnations and Picotees.—We have not yet placed pots of these intended for exhibition out-of-doors. The weather has hitherto been so cold and the frosts so sharp as to quite stop the growth of the plants, and seriously cripple them. Keep the pots free from weeds and the plants from insect pests. If it is intended to flower any of them about three weeks earlier than usual, it will be necessary to place the pots at once in a rather warm house. Blooms of the perpetual-flowering section ought now to be plentiful, and they should be freely produced until after midsummer, for, as the leading flowers die off, the lateral growths push up and continue to produce flowers, though of smaller size, hence the term perpetual-flowering. Young plants must not now be neglected, as they are not unlikely to be, owing to the pressure of work at this season. A cold frame or a cool airy house is the best place for them until the weather becomes warmer.

Dahlias.—Plants of these ought now to be quite ready for planting out, but as yet it would not be safe to do so. The plants should be in pots sufficiently large to prevent their becoming root-bound, and so far apart from each other that they will not become drawn. Admit air freely, removing the lights altogether when the weather permits. See that none of the plants suffer from want of water, and apply it in the morning in preference to the evening while the temperature is so low. The border for the plants may again be forked over.

Pinks and Pansies in Beds.—The growth of these show considerable improvement. Pansies were looking so unhappy some time ago that we had them taken up and replanted. The surface of the Pink beds has been stirred with a small hoe, and since that considerable growth has been made. The plants are quite healthy, and it only requires warmth to induce good growth which will produce plenty of flowers, though late.

Forcing Pinks.—These belong to quite a distinct type from the laced section with white grounds. Anne Boleyn is a good and useful sort, and of newer varieties we have Dorley Day, Lord Lyons, and Lady Blanche, the latter a pure white variety with smooth flowers; it is by far the best of the white sorts. Now is a good time to put in pipings of them. I generally strike them in a hotbed on a very gentle bottom heat. The frame should be kept rather close until the cuttings are rooted, when air should be given more freely without moving the pots from the positions which they occupy for a week. When fairly established plant them out in the open border until the last week in September, when they should be taken up and potted in good soil, and the pots should be placed in a cold frame until they are wanted to be placed in the forcing house.

Polyanthuses.—These seem to delight in cold weather; their blooms in the open border appear to be quite uninjured, the colours coming out in their richest hues; our only trouble is the sparrows, which will not let the blooms alone. The plants in pots seemed as if they would exhaust themselves with the production of flowers, and as there is abundance outside, we picked the flowers off the pot plants and planted the whole of them out in rich soil; there they will be no source of trouble until it is time to pot them again in autumn.

Aquilegias.—We grow nearly a hundred of these in pots, and so far they have caused but little inconvenience, except watering them when necessary. Now they force themselves upon one's attention, as the flower-spikes are rising strongly. No one who has only seen the finer species and varieties of these in the open border can form any idea of their delicate beauty when grown in pots. A.

corules is particularly beautiful, and the golden-yellow flowers of *A. chrysantha* have an excellent effect either singly or in masses. Give them plenty of air, water freely at the roots, and syringe to keep the leaves clear of red spider.—J. DOUGLAS.

Stove.

Continuous Summer Blooming Plants.—Such subjects as have a natural habit of flowering for a long period during the summer months, or of producing growth and flowers alternately at different times during that season, now require such attention as will further their disposition in that respect. *Allamandas* grown in pots and tubs, if treated in accordance with their requirements, will now be well furnished with bloom, and, as already recommended, they must be regularly supplied with stimulants, otherwise there would be a deficiency of the continued vigorous growth indispensable to the full production of flowers. The same applies to plants that are turned out, but that have limited root-space; in their case a surface dressing composed of one-half rotten manure, the other sandy loam, will be found very useful, as the enriching elements which it contains will get washed down to the roots in the operation of watering. Similar treatment as regards manure water will answer for *Aristolochias*, *Passifloras*, *Dipladenias*, and the strong-growing *Thunbergias*, and such as are planted out should be surface-dressed.

Hibiscus sinensis.—Of this there are several varieties, all of which have naturally such a free flowering disposition, that they will bloom in a very small state; consequently, they are alike useful in small and large houses. Both the double and single varieties are alike handsome. One considerable advantage attached to the plants is that they will bear cutting in to almost any extent, their free habit of growth enabling them to break out and grow away after being headed in much quicker than most hard-wooded plants. A few large specimens may be grown on to occupy the centre or most prominent position in large stoves, but small or medium-sized plants will generally be the most useful; they should therefore be propagated by putting in a few cuttings two or three times during the year. Points of the shoots 4 in. or 5 in. in length, or young breaks from plants that have been cut in taken off with a heel, will root with ordinary treatment in a few weeks. They will succeed in either peat or loam, but where free-growing subjects are thus accommodating, loam of a good free description is usually the best, as in it they mostly have a freer disposition to flower.

Stephanotis.—When planted out with a moderate root-run, and room for the head to extend sufficiently in a somewhat cooler and drier atmosphere than the generality of warm stove plants require, the *Stephanotis* will bear much the greatest amount of flower, and individual plants of it will keep on producing successional bloom much longer than when grown in pots; yet for conservatory decoration—for which purpose from its agreeable perfume it is so well adapted—there is an advantage in growing some in pots, as under this system of cultivation the time of their flowering can be regulated, and they can be transferred during the summer months to structures, where the heat is not sufficient to grow them continuously; but where they have to be placed whilst in bloom, even during the warmest months of summer, in conservatories and greenhouses, I have found it well to bring them on into flower a little slower, and to gradually inure them to the lower temperature before the blooms were expanded; as in this way they will last very much longer than if allowed to open in strong heat, and afterwards transferred to cooler quarters. The *Stephanotis* is so accommodating, that it will succeed in a lower temperature both summer and winter than that in which many people ever try it. It can be grown in a house not kept higher than from 45° to 48° through the winter, and during the summer months with somewhat less artificial warmth than is usually considered necessary for the majority of intermediate house plants. Thus treated and kept in pots 10 in. or 12 in. in diameter, without disturbance for years, they will not make shoots more than 5 ft. or 6 ft. in length during the season, but will bloom from almost every joint, the flowers lasting double the length of time they will when grown hotter. Managed in this way, they will ordinarily not open their blooms before June, but will make beautiful objects for greenhouse decoration, a purpose for which they require no further training than running the shoots temporarily round a few sticks. After the flowering is over they may be slightly cut in and replaced in their regular quarters; the growing shoots should then be trained near the glass, and there allowed to remain until ready for being similarly employed the succeeding season. By the use of manure-water whilst growth is being made after flowering, I have had plants in a satisfactory condition in the same pots for five or six years without any renewal of the soil. I have gone thus far into detail with this method of growing this plant on account of an impression which often exists, that it cannot be cultivated without more heat than some have at command; but when grown as just described, it can be kept without any loss of leaf through the winter

in a lower temperature than it will bear if grown in hotter quarters during the summer.

Potting Newly-struck Plants.—Cuttings of the more generally-grown climbing and bushy-habited stove plants recommended to be put in about the end of March will now be well rooted and have got sufficiently inured to the full air of the house to admit of their being potted. As to the time when such work should be carried out, I have found it best to steer between two courses, the one of moving the plants too soon from the little pots or pans in which they were struck, and the other, which is still worse, of letting them remain until their roots had got much entangled and the wood in a somewhat hardened condition, in which latter case the after-growth is never so free as it otherwise would be. The great point with stove plants, the majority of which are quick growers, is to keep them during their early stages sufficiently near the glass to counteract the natural disposition of a moist, close atmosphere to induce extension at the expense of that solid, short-jointed, and robust growth which is essential to vigorous health and ultimate free-flowering. As to soil, those plants that will grow in loam, especially in stoves where a strong heat is maintained, will generally flower free in it than in peat, consequently it is better in such cases to use loam; but I would by no means recommend its employment for plants that have their growth unduly restricted; for instance, in the case of *Dipladenias*, for which it is sometimes recommended, the results are so far against it, that the best flowered examples out of the many I have seen when grown in loam have not more than half equalled the same species or varieties when grown in peat.

Bouvardias.—Wherever there is a continuous supply of cut flowers required through the autumn and winter, these plants will be found to play a most important part in furnishing it, that is, if they be really well grown, but on this very much depends. Where grown strongly and vigorously, if kept sufficiently warm through the winter, they will, as the first flowers produced from the points of the shoots are removed, keep on yielding a succession of bunches from three or four of the lower joints one after the other as they are cut, whereas if indifferently treated, and the shoots are comparatively small, but the successional yield is likewise little; consequently, when grown from cuttings struck in the spring up to a blooming size in the course of the summer no time admits of being lost. Cuttings put in in March will by this time have made considerable progress, and should now be ready for transferring singly to 3-in. pots. If the treatment has been such as recommended, the superiority of the plants produced from root-cuttings over those that are made from the young shoots will be apparent. The points of the growths should be nipped out in order to induce them to break freely. They will succeed in either peat or loam, but where the latter is to be had of good quality, and to it is added some well-rotted leaf-mould, sand, and fully decomposed manure, a mixture will be formed that will push them on in the way desired. They should be kept in a warm, genial, temperature with a moderately moist atmosphere, plenty of light, air in the middle of the day, and a thin shade from bright sunshine, until they have got fully established. *B. Vreelandi*, one of the dwarfest and most compact of *Bouvardias* and a very free-flowerer; *B. jasminoides*, white and free in regard to growth; *B. Humboldtii* corymbifera, white, with very large flowers and bunches; *B. Hogarthi*, scarlet; and *B. elegans*, also scarlet, finer and larger than *Hogarthi*, from which I believe it is a sport, will all be found sterling kinds. Plants that were cut back some time ago, and which have now broken freely, if not already partially shaken out and repotted, will be in a condition to be treated in that way, using compost like that recommended for the younger stock, but in the case of these there is no need to push their growth on so fast as the young plants, for, having all the season before them, they have time sufficient to attain a size large enough to be convenient.

Gesneras.—The rich-veined velvety-leaved section of these, which, independent of their handsome foliage, form such conspicuous objects when in flower, should be started at two different times with a view to affording a succession, commencing with those first that bloomed the earliest, and that have therefore been the longest at rest. If the bulbs have been allowed to remain in the pots in which they were grown, the soil permitted to become dry, and they have been stowed away in a situation sufficiently warm to keep them in a healthy state, they will now be fresh and plump, or if removed from the pots and kept in dry sand in a like temperature, they will be in good condition for starting; they should therefore be placed in pots or pans, drained and filled with light open peaty soil or loam with which has been incorporated a liberal quantity of leaf mould and sand, keeping the soil in rather a dry state until they have commenced to grow, or there is danger of their scaly roots rotting. They should be covered about $\frac{1}{2}$ in., not more, and put in a moderate stove temperature, and when

the shoots have appeared 1 in. or 2 in. above the soil they should be moved singly into 3-in. pots.

Luculia gratissima.—This splendid autumn-flowering plant, though comparatively insignificant in a small state compared with what it is when planted out so as to cover an end wall, or other position that admits of larger development, is, nevertheless, very effective grown in the form of moderate-sized specimens in pots; a way in which it is especially useful where there is a warm conservatory. Small plants that have been headed back after flowering, partially shaken out and repotted, will now be in a condition to move into others of a larger size, in which they are to bloom, giving them good turfy loam, to which has been added a fair sprinkling of sand. If any of the shoots show a disposition to so far take the lead as to impoverish the rest, they should have their points pinched out, and the branches of all ought to be slightly tied out so as to give each sufficient room; keep them well up to the light, and do all that is possible to encourage strong growth, for upon this and its being well matured depends the ability of the plants to flower satisfactorily. Old-established plants of this *Luculia*, used for permanently covering back end walls, that have been cut back after they have done blooming, should, as soon as the young growth begins to move freely, be well supplied with manure-water, or when this or plants of a similar character are grown in conservatories or other structures, in which the smell from liquid of this description would be objectionable, a good sprinkling of Standen's manure will be found to answer all purposes. It needs nothing more than to be scattered on the surface, as the invigorating elements which it contains will be washed down in the ordinary process of watering.—T. BAINES.

Indoor Fruit Department.

Vines.—If, in successful Vine culture, one matter demands a larger share of attention than another it is the constant battle which we have to wage with insect pests; and amongst these red spider and thrips are the most formidable. The latter, if taken in time, can be effectually exterminated by fumigation, but the former does not yield so readily when once it has gained a footing, and this shows how important it is to adopt preventive measures. These consist in keeping the roots well supplied with moisture and nourishment, the atmosphere charged with ammonia, at all events during the earlier stages of growth, and judicious and regular ventilation. A check through inattention to any of these matters is not unfrequently instrumental in producing bad results. Watchfulness in regard to such matters is more especially necessary this season, considering the amount of artificial heat that has been required in order to maintain anything like a growing temperature, and the consequent aridity of atmosphere and surface drought of borders. If red spider has already appeared, first look to the conditions here indicated, and then sponge the affected foliage with soapy water. The much belauded remedy of applying sulphur to the pipes is as useless as it is dangerous in the hands of the inexperienced. Late Vines will now or shortly be in flower, and to make assurance doubly sure, frequently tap the rods, in order to disperse the pollen. Muscat Hamburg, Mrs. Pince, Muscat of Alexandria, and Lady Downes, if gone over separately with a camel's-hair pencil charged with pollen from other varieties, will not only set more freely, but will swell more evenly. Take off all superfluous bunches before they are in flower; what are left will set more freely, and the laterals should also be stopped at the same time, as growth should continue unrestricted during the time of flowering. If the borders be in any way dry, water liberally with warm water. One is constantly being asked how often and when do you water your inside borders? but it is not possible to satisfactorily answer such questions; all that can be said is that they may be watered freely provided the drainage be good, and at any time rather than they should suffer in the least from drought. Of course, the most unobtrusive would know better than to produce excessive atmospheric moisture by watering at the time when the Vines are in flower, and when they require a somewhat dry air in which to set their fruit freely. Intermediate Vineries will now need daily attention to tying down, regulating, pinching the shoots, and thinning out the berries. This latter work will not permit of procrastination, nor indeed will the former without injurious results. If lateral growths be left to develop into a thickset of foliage and shoots that have eventually to be removed wholesale, one need not wonder if shanking ensues. Grapes colouring should have free ventilation during all weathers, and if dull fires must be kept up, high night temperatures should be avoided. If there be any danger of the border getting dry do not scruple to water, even though the Grapes are ripe; such watering will not harm them if abundance of air be afterwards given to carry off excessive moisture. Outside borders that have been artificially protected should now have the covering material removed, the soil pointed over, and to prevent cracking, a coating

a couple of inches thick of horse droppings should be applied. Where shutters or other water-tight coverings have been used watering may be requisite, therefore the borders should be examined, for, though the present crop may have finished perfectly, it should be remembered that next season's fruit is, so to speak, manufactured this season, and if there be any lack of water now the consequences will be apparent enough next season, inasmuch as tendrils-like "shows" will be produced in lieu of well-developed ones. As soon as recently-planted Vines have taken a firm hold of the soil, free growth should be encouraged by closing the ventilators early on sunny days and running up the temperature to 90°. Syringe both Vines, walls, and floors at the time of closing, and conserve the moisture in the border by keeping it well mulched with stable litter.

Pines.—After such a protracted sunless time as that which we have had, as soon as bright days occur, recourse must be had to shading till the plants get inured to the change. The two or three sunny days which we have had have already browned the foliage of the sturdiest plants, and, though shading is not desirable, it is better to employ it than to have the foliage scorched. Supply those plants that are swelling off fruit with liberal quantities of tepid manure water, and keep up abundant atmospheric moisture by means of frequently damping the floors and walls, and keep the evaporating pans charging with manure water. Autumn fruiterers ought now to be showing, and as soon as this is perceived, well soak them, and increase the bottom heat to 90°. Any that are required to show should still be kept dry; a check in that way will soon have the desired effect, i.e., if the growth has been matured. Pot on succession plants; they should never be allowed to get pot-bound till growth has been completed, and then such restriction is desirable.

Peaches and Nectarines.—The earliest kinds of these now ripening should be exposed to a free circulation of air, in order to give them flavour; therefore, if the cold weather which we are now having continues, firing will still be required, in order that the desired ventilation may be given. Pinch off or tie aside all leaves that shade the fruit, and stop all unnecessary growths, an operation which will have a marked effect on the swelling of the fruit. Discontinue syringing, but still maintain a moist atmosphere in order to keep down red spider. The shoots in succession houses will require tying in, and only a sufficiency should be reserved for next year's fruiting. Any others would only have to be removed at the winter pruning, and in the meantime would exclude the permanent shoots from that full exposure which is necessary for the formation of vigorous fruit buds. Inside borders require abundant supplies of tepid water, and after this has been given, mulch them with stable litter, in order to prevent too rapid evaporation, and to conserve the heat communicated. Late houses may now be finally disbudded; all surplus fruit may be pulled off at once, and there need then be no fear of failure at stoning time; it is leaving them on so long and in such numbers which nine times out of ten causes failure at this stage. Water borders liberally, and syringe the trees vigorously, to keep down spider, and for green or black fly, fumigate with Tobacco paper the moment any are observed.

Figs.—The first supply of fruit is usually obtained from trees in pots, a system of culture which has many advantages, and which is, perhaps, the best for an early supply, but it has also its disadvantages, and of these one of the greatest is that fine flavour as regards the first crop is almost an impossibility without seriously damaging the prospects of a second crop. Owing to the root space being so circumscribed, and the demands made by both foliage and fruit so large, frequent waterings become a necessity, in order that the fruit may gain that fulness of flavour that can only be imparted by a partial withholding of water and full exposure to sunshine, both of which conditions, under the circumstances, would be inimicable to the second crop; therefore, recourse must be had to what I shall call compromise treatment, that is, the pots should be plunged in a bed of leaves, when less water would be required, and, when necessary, it should be applied freely, after which thickly cover the surface of the pots with droppings, to prolong the necessity for further watering as long as possible. The fruits should be gathered the moment they show the least symptoms of cracking, and they will then keep for three or four days in good condition. As soon as all are gathered remove the old top-dressing and substitute fresh, rich compost. Recommend syringing and water freely with liquid manure, and if red spider has gained a lodgment, syringe the foliage with a weak solution of the same liquid. Old and free-bearing trees in open borders cannot have too generous treatment; shut up early, well ply the syringe, and keep the growths restricted by pinching a few of them at intervals of a few days, a practice which insures successful supplies of early autumn fruit.

Melons.—Plants swelling off their fruit will require careful management as regards watering, as an overdose might induce splitting, whilst a meagre supply would be a sure precursor of red spider,

which soon destroys the foliage, and unless this continues good to the last the fruit will be flavourless and insipid. It is therefore a good plan to cover the bed with non-conducting material, which, as a matter of course, prevents the too rapid evaporation of moisture and the necessity for frequent waterings. Elevate the fruit above the foliage in order that it may receive the full benefit derivable from light and air. Succession plants should be encouraged to make fruitful rather than free growth; plenty of air on all favourable occasions, with a medium amount of air moisture, will insure the former, whilst a close, muggy atmosphere will as certainly insure the latter, but there will be no fruit. Plant out for the late summer's supply, and make another sowing if the plants cannot be depended on for successional fruiting.

Kitchen Garden.

Nothing can make satisfactory growth or progress whilst the weather continues so cold as it now is, and, unfortunately, at present—May 10th—there are no indications of a change; it will therefore be necessary to continue protection to all tender vegetables, by way of accelerating growth. Peas should be screened from the north-east wind by evergreen boughs; Carrots and Radishes in open borders, by placing over them Hazel spray; and Cauliflowers that have recently been planted out, by drawing the soil well up to them. Potatoes and French Beans, as they emerge from the ground, should for the present have the soil drawn quite over them, and those that have got too high for that should be covered with litter, so long as frost seems likely to occur. All such labour may seem to some unnecessary, but it is not so, as it frequently saves the crops on which it is bestowed, and certainly this season early crops are required, considering the general slaughter which the winter has made amongst all culinary plants. Easterly winds, cold though they be, have some redeeming qualities, and one of them is drying the soil, which has allowed surface-stirring amongst seedling crops, and also bringing up arrears as regards Potato planting and seed sowing, such as Carrots, Beet, Broccoli, and winter greens generally, all of which, if not yet sown, should have early attention, as should also the sowing of French Beans and Scarlet Runners; the latter should be sown in shallow trenches, to admit of liberal waterings in the event of drought setting in. The earliest sown Spinach ought now to be fit to gather, therefore the remains of the winter Spinach may be dug or trenched in, when the ground will be suitable for Beet, Peas, Broccoli, or Cauliflower. In order that no unnecessary exhaustion of the soil may take place, the old stems of Brussels Sprouts, Kales, or Broccoli should be cleared off as soon as the produce is used, and as soon as practicable let the ground be lined out into Celery trenches, or be dug or trenched according as it is required for the forthcoming crop. There should be no fallows, accidental or otherwise, in Kitchen gardens; on the contrary, each successive crop should, as it were, prepare the way for the one that is to follow it, and in furtherance of this notes as to dates and positions respecting the various crops will require to be kept. The labour of keeping such a diary soon becomes a pleasant duty, but those who do not care to take this trouble—so-called—but who crop on the haphazard principle, would at all events find it advantageous to adopt the simple rule of never allowing two crops of a like nature to succeed each other on the same plot of ground, but should endeavour to have the character of each successive crop as remote as possible. Several of what may be termed half-hardy esculents will now demand special attention. Amongst these are Tomatoes, which should be hardened off preparatory to planting out on south borders or against walls at the end of the month. The same may be said of Capsicums and Chillies. Ridge Cucumbers and Vegetable Marrows may be planted out at any time, if they can be afforded the protection of hand-lights, and by way of starting them quickly into growth, a slight bottom-heat is desirable, and easily created by the use of lawn mowings and stable litter; about 2 ft. in depth will be ample, and as the material cools down the roots of the plants will soon establish themselves in it. Seedling plants of Thyme, Basil, Sweet Marjoram, and Sage should be pricked out under shelter, and may be permanently transplanted in the open ground about the end of the month. All kinds of herbs have suffered severely, so much so, that new plantations of them will be a necessity, and provision should be made accordingly by pricking out a sufficiency of each sort. Sow Lettuces and Radishes once a fortnight; the former should now be sown where the plants are to grow, as transplanting in dry weather entails much labour in watering, and even if this be afforded the plants receive a severe check. Asparagus being now in full bearing, Seakale may be dispensed with; any yet covered should therefore now be exposed, and gaps in the plantation be made good by dibbling in sets made from pieces of roots 3 in. or 4 in. long. Salt is a valuable fertiliser for this esculent, and should be scattered over the surface after the ground is dug. Cut off seed-stems as produced and thin the crowns to one shoot only.—W. W.

ORANGE FLOWERS AND ORANGES FROM THE SOUTHERN STATES.*

By W. B. BUSH.

In Florida the Orange, Lemon, and Lime grow wild and are found in abundance. In Louisiana and Mississippi they are grown from seed. The seeds are planted in early spring or in hotbeds in January. When one year old they are transplanted in a nursery arrangement. At the age of two and half years they are budded, *i.e.*, the seedlings are of the sour variety, and to produce sweet Oranges fully matured buds are taken from bearing trees and inserted. This is done to render the tree more hardy, since the sweet seedlings are subject to a root disease called heel, while the sour seedlings are not. Hence, Orange growers resort to this means to produce sweet Oranges. The trees are transplanted at the age of four years into orchards; at the age of six flowers first appear, and at ten years the trees are called full bearers.

This beautiful evergreen is found in every civilised country where the climate is favourable, and in colder countries it is the most cherished ornament of the hothouse. It flourishes in the most southern limits of the United States, largely in Florida, and to a considerable extent in Mississippi and Louisiana, south of the lakes. In Mississippi and Louisiana they are favoured by the lakes tempering the cold north winds. There seems but little difference between these States as far as their favourable localities are concerned. The tree, however, requires delicate cultivation and studied treatment. In the year 1816 Oranges were introduced as ornaments to the States by the French. In 1830 an Orange tree in a box in bloom brought 400 francs, and about this time some attention was paid to Oranges by horticulturists, and blooming trees in boxes were sold at from 50 to 100 francs in New Orleans. The beginning of the cultivation of Oranges for fruit in the South dates back to 1848, when numbers of trees were planted, but in January, 1856, a cold wave from Texas brought the temperature down to 19° Fahr. above zero, and the large proportion of the trees were killed. Not much attention was paid to the cultivation afterwards until 1867 and 1868, and since then Orange growing has been quite successful and assumed commercial importance.

In the case of healthy trees, the time of flowering is from the beginning of February until April 10; unhealthy ones are found in bloom sooner or later. The last week of February finds most of the trees blooming. The humidity of the atmosphere materially affects the flowers; when too wet the pollen heads are injured and the secretions are imperfect. Dryness has a similar effect on the pollen and nectar, but does not affect the secretion of oil. When the temperature is too low, but few flowers are fructified, the oil cells are limp, and no nectar is secreted. The most favourable temperature is about 68° to 76° Fahr.; under 60° Fahr. flowers are blighted. When bees are found collecting the nectar, the conditions are favourable for the development of flowers and fruit, and then the flowers contain their most agreeable odour.

An ordinary tree will yield from 2 lb. to 10 lb. of flowers, ordinarily about 7 lb. As soon as the petals begin to fall a canvas is spread under the tree, and by brisk shaking the petals will fall with some leaves, which can be easily separated. The time when flowers are most fragrant is early in the morning; late in the day the odour is greatly diminished. Prior to the late conflict, negroes collected and sold Orange petals in New Orleans. A sauciful (about 2 oz.) was measured out, put upon a china plate, and set in the room, for which the negro received about 50 cents. From two to three plates would perfume a room for a week. Orange flowers produced in the extreme southern borders are believed to possess a stronger odour and more oil. The difference is accounted for in this manner: In the Tropics and semi-Tropics the trees do not begin to bear very much until about twenty years old, while in this country they begin at about seven. The development is more rapid, the tree more vigorous, and it is reasonable to suppose a better development of odour in the flower takes place. The flowers are also more fragrant and the fruit more juicy, but not so sweet as in some other countries.

Orange flowers, when placed in direct sunlight, in the course of two days lose their odour. In diffused daylight they retain it for at least three days, and in a dark humid atmosphere the odour is quite distinct after one week. When bruised, they lose their odour in half of the time stated. I have had no means of experimenting as to the amount of volatile oil, but believe that the better plan for the pharmacist is to have the petals hermetically sealed and to make his preparations direct.

Orange-flower water is one of the most agreeable vehicles for nauseous medicines that we have, and when the pharmacist can make fresh preparations they will be fully appreciated, and the

expense will not be greater. The syrup of either flower or fruit has no superior, especially the syrup of the fruit. A honey collected from Orange flowers is very fragrant with the Orange odour. The flowers, placed in tin cans and sealed up, are known to have retained their odour unimpaired for nine months. As a perfume they have no equal. To sit under a tree when in full bloom is delightful, and the fragrance intoxicating. If any one has made the syrup of Orange from the fresh juice of the fruit and used it, he will not want to use any more which is made from simple syrup and a few drops of the oil of the rind.

PLATE CLXXX.

MRS. BATEMAN'S LILY.

(*LILIUM BATEMANIÆ*)

Drawn by Mrs. DUFFIELD.

HAVING received permission from Mrs. Bateman, a well-known lover of Lilies, we had the pleasure last autumn in naming this fine new autumn-flowering plant *Lilium Batemanii*. It grows from 3½ ft. to 4 ft. high, and with suitable cultivation might be expected to attain double that height. It has a slender, light green, somewhat rough stem, inclined to bronze at the insertions of the lower leaves; the latter are crowded, alternate, long and slender, arching downwards. The flowers are semi-cup-shaped with spreading segments, somewhat recurved, medium sized, of a deep apricot tint, and unspotted. They are produced in umbels of from four to eight or twelve, not unlike in tint those of *Thunbergianum venustum*; but the plant, as to bulb, habit of growth, foliage, and time of flowering, resembles very closely *L. Leichtlini* or *Maximowiczii*, to which it is closely allied. This new Lily first flowered with us in 1875 from some small bulbs obtained from Japan in rather poor condition; we were much puzzled by its nondescript appearance, for the flowers reminded us strongly of *Thunbergianum venustum*, while the strong growth and habit were more like those of *L. croceum*. The plant being dwarf, weak, and poorly developed, we postponed that year any decision as to its character till we could obtain stronger specimens. Fortunately, in the winter of 1877-8, a large number of bulbs from Japan, under the name of *Talsta-juri*, made their appearance in the market; they were small in appearance, and much resembled those of *L. Leichtlini*, having broad, stout scales, with the front tier reaching only half-way up the bulb. Bulbs of *L. umbellatum* are in general large and flatter, with scales nearly well up to the top; and those of *L. Thunbergianum* have more numerous, slender, and narrower scales, reaching vertically higher than these up to the apex of the bulb. We purchased and planted a lot of these bulbs, and, during growth, at first thought we had got the true *L. Leichtlini*, comparing them with some of the true plants growing very near, but later on a difference appeared in stems and foliage; the former were too rough and green, whereas those of *L. Leichtlini* were smooth and dark coloured; the foliage, too, was large, more crowded, and arching, whereas in *L. Leichtlini* it is more sparse, erect, and acute; lastly, the flower-buds were blunt at the tip, marked with red, and arranged in an umbel; those of *L. Leichtlini* more elongated, green at the top, and arranged on a spike. When the flowers expanded we saw at once that we had our old friend before us which had so puzzled us in 1875. We have here no doubt a hybrid; it may be between *excelsum*, which it much resembles in shape and substance of flower, and *L. Maximowiczii* to the bulb, of which its bulb is very similar. As an intermediate form it is most interesting; as a decorative autumnal form it is floriferous, elegant, and striking, and well worthy of a good place in the garden. It will, we should think, be placed in the Martagon section along with the other three above-named forms. In this section we have many superb forms, among which we may place first the very beautiful early-flowering, canary-coloured *L. Szovitzianum*, with its twenty or thirty bell-shaped, broad-petalled flowers beautifully spotted; *excelsum*, with its tall, peculiarly graceful, nanken-coloured flowers, so exquisitely scented; *tenifolium*, elegant for its slender foliage, and handsomest among dwarf Lilies for its tall spike of scarlet bells; *Humboldtii* and *pardalinum* for their tall, floriferous spikes of light orange flowers, variously spotted, and tipped with carmine or scarlet; *L. parvum*, one of the most beautiful and floriferous, small as to its individual flower, but excessively graceful, and very tall growing; *L. columbianum*, remarkable for its golden bells; *L. polyphyllum* for its symmetrically, purple-spotted, bell-shaped, white flowers; the blood-red *L. dalmanicum*, 6 ft. to 8 ft. high, bearing thirty to forty flowers; *L. Hansonii*, a very early, stout-growing kind, likely, when better known, to be an universal favourite; and last, but not least, *L. Leichtlini*, long acknowledged to be, with its delicately yellow-tinted, purple-spotted flowers, one of the most graceful Lilies in existence.

ALEXANDER WALLACE.

* From a paper read at a meeting of the Philadelphia College of Pharmacy in January last.



VEGETABLE CULTURE IN MARKET GARDENS.

THAT ordinary vegetable crops pay the grower well there can be no doubt, and the soil cannot be better employed than in producing good vegetables. In country places every cottager can grow nearly enough of them for the maintenance of his family; land is cheap either in the shape of allotments or otherwise, and, therefore, a good supply of wholesome vegetable food can be obtained at little cost. Londoners, however, and the inhabitants of other large towns have to depend upon the market for their supplies of vegetable food, and although the market gardener often gets but little for some of his produce, the consumer has to pay comparatively high prices for all he purchases in that way. If growers could sell their produce direct to the consumer they would get better profits than they now do, and the consumer would get his vegetables much cheaper and better. Sometimes good Cabbages, Peas, and similar produce may be bought from hawkers at very low rates, but in the market, owing to salesmen's commission and other expenses, people have to pay as dearly in proportion for vegetables as they do for animal food. All things considered, however, market gardeners make a good per centage on the money invested in their business, the real sufferers being the consumers. To have vegetables wholesome we must have them fresh, and this the poorer classes seldom get. The quantities of such produce sold weekly in London are enormous, and yet at times there is room for more.

GARDEN FARMS.—What may be termed garden farms are considered the most profitable, inasmuch as the facility of intercropping, &c., is greater than when market gardening proper is carried on; the land can be cropped with Corn or other crops, and it is moreover kept clearer of weeds than if either farm or garden crops alone were grown.

Mr. W. Glenny's farm at Barking (says Mr. Evershed, in the "Agricultural Journal") is a good illustration of a well-managed garden farm. It consists of 150 acres of gravelly loam, made rich and friable with manure, and otherwise kept in the highest state of cultivation; the land is entirely under vegetable crops, with the exception of 18 acres of permanent pasture, and 16 of wheat on the stiffest land. The vegetable portion is thus appropriated: Potatoes, 34; spring-sown and Lisbon Onions, 15; Cabbages (red and others), 13; seed beds, 2; Carrots, 7; Parsnips, 9½; French Beans, 6; Scarlet Runners, 3; Vetches and green food for horses, 4; Parsley, 1½; Willow and Osier beds, 1½; Wheat, 13; Mangold, 1½; Peas, 8; Asparagus, 1; men's allotments, 1; Cucumbers and Melons, 2; seeds, 1; small crops, such as herbs, &c., 11. Twelve horses are kept to cultivate the farm, convey the produce a distance of 8 miles to London, and to cart manure. The sums paid for manure, exclusive of cartage, during three years are £211, £261, and £278; from 400 to 700 bushels of soot are also used in each year. About one-half of the manure is purchased at 3s. or 3s. 6d. per ton, and is drawn from London in the empty waggons; the remainder is bought at 5s. per ton at the railway station or quay. Some other manures, including spent Hops from an adjoining brewery, are also brought on the farm. The labour bill, including beer, is £1500, or £10 per acre. On June 17, the number of labourers employed, including 10 women, a wheelwright and a salesman, was 35, and their wages amounted to £30 per week. During the winter five women are employed preparing goods for market, bunching Leeks, pulling and bunching Greens, putting up Onions, &c. The implements of the farm, besides carts and market waggons, consist of common ploughs, a double-breasted or ridging plough for moulding up Potatoes, Beans, and Peas, and some hand-drills. A small patent tool which resembles a Dutch hoe set on wheels must be mentioned, because its use

shows the mechanical effects of manure and good farming in making the surface friable. It is not uncommon for a man to push this little implement over two acres in a day, cutting up all the weeds between the wide rows of the garden crops. A Willow bed supplies bunching rods for tying bunches of Onions, Greens, &c. The Willow plants are set 18 in. apart in the rows, which are 2 ft. asunder, and the bed lasts twelve years. Others of coarser habit are grown to make baskets for vegetables, and the cost of the baskets with a few sacks exceeds £50 a year. The cost of baskets, transit and market dues, are estimated at 50s. per acre in large market gardens. The weekly wages of hands vary from 5s. to 10s. for boys, 10s. to 14s. for women, and 15s. to 25s. for men. Most growers, however, get a good deal of their work done by contract at the following rates: Hoeing Cabbages at 2 ft. apart by 15 in. first and second time 5s. per acre, third hoeing 4s 6d.; Potatoes, 3s. to 4s. per acre; Carrots, broadcast, £3; Onions, broadcast, £4; lifting early Potatoes with fork, sorting them into three sections, and placing them in baskets, 8s. per ton, or from 24s. to 30s. per acre; gathering Peas, from 4d. to 6d. per bushel; and lifting, bunching, and loading Carrots, 7s. per twenty dozen bunches.

CULTURE OF THE SOIL.—Every vacant piece of ground not required to be immediately cropped after the first week in November is deeply trenched and heavily manured, and this even amongst fruit trees. To most people the trenching of ground under fruit trees would seem undesirable, on account of the injury that their roots might sustain, but as it is done every alternate year, at least, the roots never get so large that their removal would injure the trees; of course the trenching does not come nearer their trunks than 6 ft. or 8 ft. Mr. Dancer, of Chiswick, practises this method, and he finds that the trees are benefited by it; he, however, makes one provision, viz., that it must be done every year, and that plenty of manure must be added. Those who grow vegetables between fruit trees gain immensely by the deep stirring of the soil, and where that is not done, digging and manuring generally receives attention. Mr. Wilmot, of Isleworth, seldom grows vegetables between fruit trees, but he manures and digs the land frequently. Mr. Yeldham, of Hammersmith, has proved by experiment that the trees which yielded the best crops and best fruit were those that received annually a fair amount of manure, forked in during the winter, and that had the soil kept free from weeds or crops of any kind during the summer. Trenching is considered by market gardeners to be of the greatest importance in the case of land about to be cropped by early vegetables, such as Cauliflowers, Peas, or Lettuces, and also for root crops, such as Parsnips, Carrots, Beetroot, Salsafy, or Scorzonera, or other deep-rooting plants. Land that is to be planted with the root crops just mentioned is generally that which was trenched and heavily manured the previous year; and fresh manure is never added immediately before such crops are sown, as freshly-manured land would cause the roots to fork, instead of growing straight, and thus considerably reduce their market value. In trenching, a staff of men are placed five or six paces apart, and each works till he meets his neighbour. The manure, if any is applied to the surface soil, is thrown into the bottom of the trench, and the soil from the bottom of the trench, which is usually 3 ft. deep, is brought to the top; this practice is carried on year after year. At Walham Green, Fulham, where land is chiefly devoted to market garden crops, the most has to be made of it, owing to the high rental which it realises. A plot of several acres, for which £12 per acre is paid, consists of fruit trees undercropped with vegetables and flowers, a plan which is said to be highly remunerative. The produce of fruit alone one year with another realises £25 per acre. Plum and

Pear trees are planted alternately in rows, a plan by which the taller-growing Pears throw very little shade on the Plums. Not a little of the success which attends the undercropping of vegetables, fruits, and flowers, however, is due to the large quantities of rich, well-rotted manure and manure water that is obtained from a clean and well-managed piggery, the occupants of which consume the superfluous vegetables and fruit.

All vegetable refuse, except what is really necessary to burn, is turned to good account by the market gardener. The stumps of Brassica and Borecoles are carted away to the manure yard and built into stacks, and when dry are used by the labourers for making fires to boil their kettles. Good farm-yard manure is, however, preferred to artificial by London market gardeners. Market growers use manure in what some would term "extravagant" quantities, upwards of 80 tons per acre being frequently used at one application, and yet it has to be purchased and carted six or seven miles. Soot is also freely used in the market grounds in addition to stable manure, and the condition of the crops tells how much they are benefited by it.

Root Crops.

In these may be included Potatoes, Beetroot, Parsnips, Turnips, Carrots, Salsafy, &c., all of which form important market garden crops. In London market gardens immense quantities of Parsnips and Beetroot are grown, but the chief supply of Carrots sent to market during the winter is grown near Weybridge, Esher, and Cobham, in Surrey, where large fields are devoted to their culture. If possible, in market gardens all root crops are cleared off the ground in time to admit of the ground being deeply trenched and ridged. Preparatory to sowing, the surface of the soil is levelled with steel forks, breaking it as fine as possible in the operation, and finishing off by smoothing the surface with a wooden rake. Some growers even roll it afterwards, but this is only done in light ground, and when the soil is dry. Many open the drills in the morning and sow the seeds in the afternoon, thus ensuring, they affirm, earlier germination than would otherwise be the case. As a rule, market gardeners select a piece of ground for root crops that has been heavily manured the year before and cropped with Cabbages, Cauliflowers, French Beans, Celery, or similar vegetables which have been cleared off in time to allow the ground to be trenched and ridged for at least a month prior to levelling it down for sowing. The average cost of preparing these crops for sale is about 8s. per twenty dozen bunches, viz.—digging up roots, 2s. 6d.; washing same, 1s. 8d.; bunching, 3d. 4d.; cost of Willows for tying, 6d.; and to this are to be added carriage and commission. Beetroot is not bunched on account of its being easily damaged by rubbing.

PARSNIPS.—In market gardens Parsnips are always sown as soon after the middle of February as possible, provided the ground is moderately dry and warm, and crumbles freely with the fork. Preparatory to sowing, the ground is levelled, and the soil well broken in the operation, and finishing off by raking the surface smooth with a wooden rake. Shallow drills are then drawn for the seeds at about 18 in. or 20 in. apart; and after being sown they are covered in by the feet or the back of a rake, and the whole is smoothly rolled. Sometimes white or green Cos Lettuces have been planted in rows at the above distances, and the Parsnips are sown in lines between them. In either case, Lettuces are planted—if not first, they are put in afterwards; and as the Parsnips take a long time to germinate, the Lettuces are removed before they injure them. As soon as the Parsnips are fairly up and growing, they are thinned out a little, and when well established, they are finally thinned to 9 in. apart. The

Lettuces, when marketable, are tied up and removed before they can choke or otherwise injure the Parsnips, which afterwards soon grow rapidly, no further care than occasional hoeing being then bestowed upon them. The bulk of roots per acre is enormous, many of the specimens measuring individually 7 in. and 8 in. in diameter at the shoulder, and 20 in. to 24 in. in length. The variety grown in market gardens is the Hollow-crowned, a capital sort, that produces roots from 4 in. to 6 in. in diameter at top, and from 10 in. to 20 in. in length; and the crowns are, as a rule, buried a little below the surface soil. Parsnips are not brought to market much before November, unless the demand for them is great and prices high. But from that time until the middle of February they are in fine marketable condition, and, being always left in the land where they grow, are lifted as required. Being thus left undisturbed, they preserve their flavour much better than they do when lifted and stored in pits.

BEETROOT.—A good crop of Beetroot is very remunerative, and when there is a ready sale for it in the market it pays better than any other root crop. The main sowing is made to succeed Wallflowers, Radishes, Spinach, or Cabbages, and it is also often grown on Asparagus ridges, between rows of fruit bushes, and between lines of Vegetable Marrows; and even when growing in the open field, it is often intercropped. An early sowing is usually made, in lines about 15 in. apart, in the first week of May between rows of Cabbages or Lettuces, recently planted; after the seeds germinate and the plants are well above ground, they are thinned out into patches with short hoes, and when they have formed a few rough leaves they are thinned out to single plants by hand. Some make a sowing even as early as in March in a sheltered piece of ground for yielding an early supply. In harvesting a crop of Beetroot which has to be kept through the winter, the roots are carefully dug up, preserving them their whole length intact, and keeping 2 in. of the stalks attached after the leaves have been twisted off by hand. They are then built in pyramidal-shaped clumps, and covered with straw, over which a coating of soil is put to exclude frost. Leaving the roots in the ground is the best plan, as their proper flavour is thereby preserved better than when lifted and stored; but they are liable to be injured by frosts in January, or to be locked in the soil when it might be convenient to send them to market. Some of the darkest and finest-shaped roots are kept for seed-bearing plants, and are planted in some out-of-the-way nook by themselves. Transplanting Beets is only resorted to to fill up vacancies in the rows, as in the operation the main roots are often broken, or otherwise so damaged, as to render it almost impossible for them to produce good roots. Dark crimson-coloured Beets are those which are most esteemed by market gardeners, most of whom grow their seeds saved from selected plants. Carters' St. Osyth is a favourite kind with many growers, but none are liked so well as the selected dark crimson.

CARROTS.—Early Carrots are largely supplied from France; they are very tender and delicious, and, in many instances, far better than those obtained from the London market gardens. The main crops of Carrots are treated in much the same way as other root crops. Seed of early varieties is sown from February to March, after which the main crop is put in, and the plants are not thinned out quite so much as other root crops. The Early Horn is the kind used for early sowings; and, when in good condition, they sell well in the market. There is a very handsome early Carrot named Early Nantes, which would make an excellent kind for market if it could be got true to name, but this is a difficult matter. The Long Surrey and Long Orange are the chief kinds grown for main crops, and roots of these are furnished by hundreds of tons

all through the winter months. Some growers force the Early Horn on hotbeds and in frames, in order to have them ready for use in March or April, and these realise good returns. Some also sow beds in a warm position in August and September for winter use. If the weather is mild, fine little roots are obtained, and they sell readily at good prices.

POTATOES.—In the neighbourhood of London early Potatoes are chiefly grown for market purposes, late kinds not being considered sufficiently remunerative to occupy such highly rented ground. The varieties usually cultivated are the old Ashleaf Kidney, Myatt's Ashleaf, Lapstone Kidney, and Regents. The ground selected for Potatoes, if an open quarter, is usually the lightest and driest at command, as in such soils the crop comes to maturity sooner than it otherwise would do, and tubers raised in such soils are of the best quality. About Deptford Potatoes are planted in rows 2 ft. apart, the ground being previously manured and trenched, and levelled down with the plough. Planting takes place as soon after the middle of February as time and convenience will permit. Some growers plant two rows of Potatoes between their lines of Gooseberry and Currant bushes, which are 6 ft. apart, and partially under the shade of large fruit trees; but when fruit bushes do not occupy this position, the Potatoes are planted in continuous rows, about 2½ ft. apart, just as they would be in open fields. Other market gardeners loosen the soil between the rows of their spring Cabbages in March with a steel fork, and therein plant Potato sets with a dibber. When the Potatoes appear above ground the Cabbages are removed for market; therefore, little or no injury happens to either crop, and as soon as the Potatoes get up a little and some earth is drawn to them with a hoe, the intervening space, if hard, is loosened with a fork, and again planted with Brussels Sprouts or early sprouting Broccoli. Before these can do much injury to the Potatoes the latter will be ripe, when they may be lifted at once for market, or kept for seed or home consumption. In cases in which Potatoes are grown in the open fields a crop of Lettuces may be got from between them, but after these are removed it is not considered well to plant anything else. No sooner are the tubers all lifted, than the haulm is collected and carted to the manure heap, and the ground is then manured, or not, according to circumstances, and ploughed or dug over, when it is ready for planting Cabbage, Coleworts, Leeks, or for sowing with winter Onions, Spinach, Radishes, Turnips, or late Celery. The summer culture of Potatoes in market gardens consists in hoeing and keeping the crop rigidly clean. Potato crops are always earthed up—an operation which is done by means of broad iron hoes or double-moulded horse ploughs; and they are, as a rule, lifted with forks, but sometimes by the plough, which performs the task more expeditiously. The tubers, being collected and sized, are put into bushel and half-bushel baskets, and are covered with haulm, which is held in its place by means of twigs of Hazel. These baskets are then piled one above the other in waggons for market.

With regard to general market Potatoes, a correspondent writing to the "Gardener's Chronicle" in the early part of 1878 remarked: When a grower of Potatoes for market can undertake to rent for a short season of six months land for the purpose of growing Potatoes for market at a charge of £13 per acre, it might well be asked, How are the profits to be obtained, and what kinds of crops are to be looked for? For this price the land is taken, well-manured and fairly well cultivated, the planter having the choice either of casting out drills with the plough or of dibbing the sets in. In the present case the former plan is adopted; the seed is laid in rapidly by women and boys, and plough-moulders follow behind and cover in as fast as the sets are laid. A wooden

roller presses down the apex of the ridges thus formed and presently harrows will be run over the ground, and this will leave it in excellent condition for hoeing when the crop is well through the ground. The average quantity of seed per acre is about 30 bushels of small and 53 bushels of large. The present average price of seed of Victorias is 5s. per bushel, which, exclusive of labour, adds to the expenses about £8, and if £6 be added for labour and general cost per acre for lifting and other charges, it will make a total of £27 per acre to be deducted from the value of the crop before there is any profit to go into the hands of the cultivator. Potatoes are a risky crop, late frosts may injure them, drought may check them, excessive moisture may provoke an undue amount of haulm growth and a severe attack of the inevitable disease. A good crop would be 8 tons per acre on ordinary fields and from that may be deducted ½ a ton of chits worth about 15s. for pigs' food, and 1½ ton of seed size, leaving 6 tons of ware for market. This estimate will only be fulfilled if there be no disease, but if, as is too often the case, one-third be diseased, the largest tubers as a rule being the worst, then at most there will be but 4 tons of ware tubers for market, and only 1 ton of seed. The price of Potatoes in the market is affected by the state of the crop, which, because of the immense extent of ground planted, is certain to be an abundant one if there be no disease, and the price then will range from £4 to £5 per ton. With a clean crop of Victorias held over until the market had settled down to its winter price at £5 per ton the amount realised per acre for 7½ tons would be £37 10s., and adding 15s. for the ½ ton of chits, £38 5s. A diseased year would give 5 tons at about £9 per ton, which would give a total of £45 15s.—a better paying crop, though less in bulk; but as the disease is so irregular in its effects it may be that this particular grower would not have more than one-half a crop clean for sale—a common result when the disease is very prevalent, and therefore it would not be safe to look in any case for a product that should realise more than £40 per acre under any circumstances. If from this be deducted the £27 per acre for expenses, and at least £3 for cartage to market, it will be found that £10 per acre is no great profit to look for out of such a venture, as all the amount deducted must be paid in hard cash before the crop can be marketed. In spite of all the contingent losses to which the cultivation of the Potato for market is liable, it is evident that it is in market districts yet one of the most wide-grown and best paying crops. During the present winter, whilst Turnips have been selling for a song and green stuff could hardly be given away, good Potatoes have been fetching £10 per ton, and to have more of a vegetable that will certainly sell at a good price is the desire of all growers. Even so late as the end of March is comparatively early for the planting of Potatoes in the open field, but Victorias are late growers, and therefore the safest to plant now. The more growers on a large scale recognise the desirability of planting the latest sorts first and earliest kinds last, the more probable is it that their crops will escape at least one of the Potato ills—late spring frosts.

TURNIPS.—Generally speaking, the Turnip is not considered to be a very profitable crop; the demand for it in summer is not great, but in winter and spring large quantities of Turnips are disposed of, and the tops or greens from the winter crop fetch good prices in spring, especially when other kinds of greens are scarce. They are usually sold by the pound or bunch. The earliest sowing of Turnips is made in the end of January or early in February, in pits or frames, or on hotbeds without frames; and main sowings are made broadcast on a field about the end of February, or in March, to be succeeded by another sowing made in April. After the plants come up they are thinned, and the surface-soil is at the same time

loosened by means of small hoes. The largest roots are first drawn for market; thus the plants get thinned, and those that remain have more space for development. The Early White Dutch is the variety commonly used for spring work, and the White Stone for main crops. When grown in brick pits, 2 ft. or 3 ft. of rough fermenting material is cast into the pit and firmly trodden down, and on this is placed a few inches in thickness of garden soil, which is also made firm. The seeds are then sown broadcast, and afterwards the frame is kept close and moist until germination has taken place, when plenty of air is admitted on every favourable opportunity. If the seedlings come up too thickly, they are thinned out to 3 in. or 4 in. apart. Frame Turnips are never large; the aim is to grow them quickly to the size of a hen's egg, when they are tender and of good flavour, and to market them at once. The method of growing them in hotbeds without frames is, to cast out trenches 18 in. deep, 6 ft. wide, and of any length, and firmly fill them with manure; over this a coating of soil is placed, and rolled or beaten solidly with the back of a spade; the seed is then sown, slightly covered, and finished off by rolling again; hoops made of Hazel sticks are then fixed over the beds, so that they can be covered with mats, and in the event of hard frosty weather setting in, some straw litter is added to the covering. If the weather is mild, the mats are let down every day so as to admit light to the young plants; and as soon as it can be done with safety, they are removed from over the beds and left erect around their sides in order to ward off winds. Sometimes the aid of either frames, or hoops and mats is dispensed with, and the crop is grown on hotbeds like those just described, a little loose litter being merely strewn over the surface until the plants are established; in this way excellent Turnips are produced a week or two later than those which have been protected. Some growers use the space between the lines of frames for growing Turnips; and well it answers for that purpose, as, owing to the soil being below the general level, it keeps comparatively moist, and the belts of frames protect the plants considerably. The soil between Turnips is kept stirred with the hoe as frequently as possible, for no crop is more benefited by surface-stirrings than this. Early Snowball is a kind sometimes used for main crops, and also a very hardy variety named Six Weeks. The Chirk Castle Black Turnip is often seen in winter in the market. It is the hardest Turnip grown, and although its skin is quite black, its flesh is as white as snow, and of excellent quality. Spring Turnips are generally got off the ground in time to permit of it being cropped with French Beans, Summer Cabbage, Spinach, or Celery. Turnips for autumn use, and also the winter ones, however, consist chiefly of the White Stone, which is a beautiful white-rooted sort, which cultivators generally sow on ground just cleared of Peas, and send them to market in winter.

JERUSALEM ARTICHOKE.—These find but little favour with the London public, and there is but little demand for them; consequently, they are not grown in London market gardens. As this vegetable may be grown in almost any place, it is generally planted on gravelly pieces of ground that would be too dry for other crops. Knolls or mounds are usually cropped with it, and it is also grown along the sides of hedges and in shady places. A few growers, however, grow it on good soil in open and somewhat exposed positions, and the result is an abundant crop of fine tubers. After preparing the ground by manuring and digging or trenching it, the tubers are planted in February, in rows like Potatoes, and are allowed to grow unchecked, and without being earthed up, till November. By this time they will be ripe and in good marketable condition. The stems, which are sometimes killed by the frost, are cut over close to the ground, and earth is spread over the

tubers to exclude frost. The tubers are lifted for market as required, as their flavour is better when so treated than when lifted and stored in pits. In February all that remain are lifted, for if left longer they would be useless for culinary purposes; what are required for sets are then saved for that purpose and the remainder sold for what they will fetch.

SALSAFY AND SCORZONERA.—These, though not popular market vegetables, are grown in limited quantities in some of the best market gardens. The seed is sown rather thinly early in April, in drills about 1 ft. apart in deep rich soil. When up the plants are thinned to 6 in. apart in the rows, and during their early stage some catch crop is planted between the rows. The roots are generally left in the ground till they are wanted for market, when they are lifted carefully so as not to break the roots, which in that case would lose their milky juice, and consequently their flavour.

HORSERADISH.—This is not grown to a very great extent in London market gardens, but where it is found in them it is always in deep, rich, open soil. Crowns such as are not marketable are planted deeply in trenches 2 ft. apart; the plants stand 1 ft. asunder in the row. Manure is then applied on and about the crowns, which lie in a slanting position in the bottom of the trench, and they are at first not deeply buried. Early in spring, after they have started fairly into growth, the ridges between the trenches are levelled down lightly, and a crop of Radishes is sown on the surface, the latter being off in May, and by the time the Horseradish appears in full row, the Radishes are cleared off the ground, which is hoed and afterwards kept clean. Covent Garden is, however, now chiefly supplied with Horseradish from Holland. A few weeks before Christmas may be seen on market mornings huge heaps of it, consisting of bundles containing from 20 to 25 sticks each, of first-rate quality, tied up with small, but strong withes. These bundles arrive packed firmly in casks, each of which holds nearly 300 bundles. The sticks are not washed before being packed, but are placed in the barrels apparently as they are dug up, with a quantity of soil adhering to them, and in this way they keep good for a length of time. December being the principal month in which Horseradish is required, it would scarcely answer the purpose of market growers near London, who have to pay high rents, to occupy a very large portion of their ground with crops that will not admit of others being grown between them, and which can only be sown in quantity at one particular season.

C. W. S.

Children's Gardens.—Allow me to say that the love of flowers is not wholly confined to the educated. The poorest children enjoy their Saturday's holiday searching for the early Primrose, Violet, wild Rose, or Honeysuckle just as much as those of the rich; nor do I for a moment think that all collect their flowers for the sake of the penny which the squire's or parson's wife gives them. I may remark that the cultivation of the soil is one of the greatest blessings conferred on us. What is the first thing which the agricultural labourer, returning from his toil, wants to see after supper? It is his garden. He feels no longer fatigued by labour, his helpmate forgets the worry of domestic duties that needs must be, and his children forget that awful School Board. See the so-called gardens of poor children in the environs of London; a little Mustard and Cress, a few stunted Radishes, a stray Wallflower, a little London Pride, a Daisy, yet these are a source of the greatest interest. Turn, then, to older children. How many of the hard-working men on our railways could bear their dreadful solitude as pointsmen unless they had some ground, perhaps unfruitful, to tend? How many weary hours are there in that waste spotted away? How many cares forgotten, troubles lightened, offences forgiven? I speak as a gardener, though but an amateur; yet to live in any town for a lengthened period is wearisome. I must have my Roses and even my Cabbages to look at.—EUGENE E. P. LEOG, M.A., *Court House, Lutton Cheney, Dorset.*

THE INDOOR GARDEN.

ADIANTUM PALMATUM.

THIS handsome and distinct species will make an excellent companion to *A. Farleyense*, owing to the large size of its pinnae and the length of its fronds. It was discovered by M. Roelz, at an altitude varying from 10,000 ft. to 11,000 ft., in Peru, a fact of great importance, as it may be cultivated in a greenhouse temperature. A very noticeable feature in the plant is the flexuose or zigzag character of the rachides, most marked near the apex of the fronds and the rachides of the primary pinnae. The pinnules are herbaceous in texture, smooth, large, from 1 in. to 1½ in. in breadth, distant and very distinctly stalked, the stalks varying from ¼ in. to ¾ in.; the terminal ones are usually wedge-shaped, while the lateral ones are truncate at the base, so as to become semi-circular in outline; they

is nothing better for shading than scrim canvas, which may be obtained of almost any draper. Pieces should be cut off about 4 ft. in width and the length of the light, and each end should be tacked to a light wooden roller. Thus arranged, they may be used with facility, and they do not get displaced by wind.—J. C. B.

THE FRUIT GARDEN.

INSECTS ON FRUIT TREES.

THE unseasonably cold weather which we have experienced for a long time past has not only been injurious to the blossoms of all fruit trees, but, owing to their slow rate of growth, has rendered them a prey to insect pests, and more especially to green fly, with which



Adiantum palmatum.

are deeply cut down into from three to five large lobes, which are again more or less parted, an oblong sorus terminating each of the divisions in the fertile portions. It received a first-class certificate when shown some time ago at South Kensington. For the annexed representation of it we are indebted to Mr. Williams, of Holloway.

Shading Frames.—Shading of some kind for frames is necessary during the summer months. Bast mats are often employed for that purpose, but the shade which they afford is far too dense for most plants. The light which plants growing in frames receive is never equal in value or in power to that admitted into houses, hence the necessity for using some material which merely breaks the force of the sun's rays without depriving the plants of their beneficial influence. Perpetual shading by means of whitewash is not advisable; it may save labour and guarantee the foliage against scorching, but the little extra labour involved in putting on and taking off shading material will be recompensed by the extra vigour of the plants. There

Peaches and Nectarines are now in most places badly infested. In fine, warm seasons these are easily dealt with, as then one need have no hesitation in using the garden engine and freely wetting the foliage, but to do so while we have no sun, and with a cold, biting wind always blowing would only make matters worse, as although the fly might be washed off or destroyed, the wet would be productive of much harm. Vegetation will stand a great amount of cold so long as the atmosphere surrounding it is dry, and, tender as the young leaves of Peaches and Nectarines are, they form no exception to the rule; therefore during such times as these every effort should be used to screen them from damp as much as possible, as under such adverse circumstances nothing is so fatal to the flowers. Rather than syringe or wet the trees thus early under the present unsettled state of the weather, it will be advisable to go carefully over them with Tobacco dust, which, puffed among the young shoots by means of a cheap, handy distributor, now made and sold for the purpose, will soon destroy the fly. A shilling tin of Tobacco dust used judiciously will go a long way if applied during a still day, as otherwise there is much waste, owing to its being very light, and

therefore easily blown away. As this ground Tobacco lodges in every curled leaf and on the tips of the tender growth, it soon makes these positions very uncomfortable for insects, and the more they disturb themselves the more enveloped they become, till death puts an end to their struggles. In order to cleanse the trees when the weather gets more favourable wash off any stragglers that may have escaped; there is nothing better than a well-directed stream from the garden engine; but as the foliage is this season thin and easily torn, the jet should be broken, and not allowed to play against it with full force, unless at a long distance off, so as to diminish its power. In order to give the trees and wall time for drying, this operation should be done early in the morning on a warm, sunny day, but by-and-by the evening is the proper time for such work, as then it has a very refreshing effect and prevents the spread of red spider, a pest to which Peaches and Nectarines are particularly subject. Fortunately, however, they cannot endure cold water, which not only keeps them moving, but breaks up their webs.

It is the practice with some to use one or other of the many kinds of insecticides made for the destruction of red spider and green fly, but if not very carefully applied and properly diluted they are dangerous, and often do considerable harm to the fruit. For use in a liquid form there is nothing so safe and effectual as Tobacco juice, obtained by steeping the Tobacco in boiling water, and adding thereto an ounce of soft soap to every gallon, and if some Quassia chips be soaked or boiled with it the mixture will be all the more effectual. A pound of Tobacco added to the ingredients just named is sufficient to make 10 or 12 gallons of a strength that will kill green fly almost directly it touches it. A decoction made as above stated is always handy to keep in a large bottle for the purpose of dipping fruit tree shoots into, and also those of Roses, for it frequently happens that if taken in time the spread of these insects may be stopped at once, and much after-labour and annoyance saved.

I have found that Peach and Nectarine trees growing on walls derive much benefit from being syringed with soap-suds every week or so, followed daily with clean water; the suds act as a preventive, which, as the old proverb says, is better than cure. Certain it is they act as a charm, and in some way or other have a very stimulating effect, for whenever used the foliage soon assumes a changed look for the better, and remains in a healthy condition. Apricots, though not subject to green fly or red spider, are very liable to the attacks of a maggot that curls up the leaves and eats its way out. These are unusually plentiful this year, and should be searched for and destroyed, or they soon do irreparable mischief.

The Gooseberry caterpillar is one of the most annoying and destructive of insects, as it is so voracious that it clears all before it, that is, so far as leaves are concerned. Many resort to picking it off by hand, but the quickest way to exterminate it is either to dust the bushes with Hellebore powder, or syringe them with a decoction made from steeping leaves of the common Foxglove in water. In order to deal with the aphid on Currants the best way is to snip off the tops of the young shoots, as it is only the tender leaves there situated that they attack.

S. D.

QUALITY OF STRAWBERRIES GROWN FOR MARKET.

"J. S. W.'s" statement (p. 373), that it does not pay market growers to ripen their Strawberries properly, and that they "hurry them into market as soon as they are red, whether ripe or not," will probably astonish those who, like myself, know from long experience that the very reverse of these conditions is necessary in order to make Strawberry forcing profitable. Allow me, as a market grower, to inform "J. S. W." that it does pay not only to ripen Strawberries, but to finish them off in a perfect manner; but it certainly does not pay to send unripe fruit into the market. If "J. S. W." had sent as many baskets of Strawberries into Covent Garden Market as I have done, he would be aware that it is the high finish, that is to say, the fine glaze, combined with size and flavour, which regulates the price. So much is this the case, that of a given variety, some samples, although equal in size, will not realise so much by several shillings per pound as others which are better finished off; not only is this the case, but the experienced grower knows full well that by gathering his fruit before it is matured, it loses considerably in weight. Your correspondent has probably confused the outdoor Strawberry with the forced fruit, the former, owing to various reasons, being gathered as soon as it is coloured; but the best growers allow their forced fruit to hang until it is ripe, knowing from long experience that such is the only way to make the most of their crop; they thereby ensure both quantity and quality. No market grower would prefer to send sour Grapes, immature Pines, or Melons, or half-ripe Peaches to market, and yet "J. S. W." asks us to believe that such growers are so little

alive to their own interests as to gather their Strawberries before they have attained either their proper weight or flavour. "J. S. W." does not appear to be aware that the market is subject to constant fluctuations. So much is this the case, that growers, instead of always picking their fruit before it is ripe, are often at great pains to keep it for a time until there is a demand for it. It will probably surprise "J. S. W." to hear that we have often had here during the middle and latter end of May upwards of 2 cwt. of fruit hanging ripe for a week before it was gathered. There is no regular price for fruit, its value being regulated entirely by the demand, which often fluctuates in a remarkable manner. Regular growers for market are fully aware of these changes. I am acquainted with a very large grower, the largest, in fact, in the neighbourhood of London, who has at the latter end of May the whole of his houses full of ripe Strawberries. On one occasion I was there when every fruit in the place was ripe, and the whole of the glass was heavily shaded, the grower in question informing me that he dared not water a single plant. This was at Whitsuntide, when good fruit is seldom wanted, and, I may add, that a few days later the price advanced, when, of course, the fruit was immediately marketed. "J. S. W." will therefore perceive that he has been wrongly informed.

As illustrating the influence which flavour exercises upon the value of Strawberries, I may mention that the variety *Marguerite*, which, although when well grown, is in appearance scarcely inferior to *Sir C. Napier* and grows much larger, never realises so much as the last-named variety, the reason assigned by the fruiterers being that their customers complain of want of flavour. I will cite another instance which should convince "J. S. W." that flavour is held to be of the first importance in a market Strawberry. Some years ago I crossed *Marguerite* with *Sir C. Napier*, hoping to secure the fine qualities of the latter in connection with the more robust habit and enduring nature of the former. I obtained some really handsome-looking varieties, large and firm, with a beautiful glaze, in fact, the very perfection in appearance of market Strawberries. I took them to a leading fruiterer in the Centre Row, Covent Garden, who was pleased with their appearance, but, on tasting them, he at once emphatically condemned them, as they all, unfortunately, in the way of flavour resembled the female parent. When *Vicomtesse Héricart de Thury* first came into notice I asked the opinion of this same fruiterer concerning it. His words were: "It is of no use to you; do not grow it. It is bright, but deficient in flavour," and yet the same man stands ready to buy almost any amount of good *Napiers*.

When I said that market gardeners were obliged to grow kinds possessing a more delicate constitution than *Héricart de Thury*, I simply stated a fact "J. S. W." corroborates himself, as he informs us, and quite rightly, that *Sir C. Napier* is the kind most extensively grown by them, but he should have added that, owing to its flimsy, tender character, it is one of the most difficult kinds to manage. "J. S. W." may rest assured that were *Héricart de Thury* equal in quality to *Sir C. Napier*, and that did it realise the praise which that variety does, market growers would be only too glad to adopt it on account of its accommodating nature. And yet "J. S. W." informs us that private growers who force *Héricart de Thury* grow first-rate sorts, but that market growers, who almost confine themselves to *Sir C. Napier*, only grow second-rate kinds. An effective illustration of the relative value of the two kinds will be found in the fact that a grower here, who was induced to try *Héricart de Thury*, only realised for it the half of that which he obtained for *Sir Charles*. It will therefore be seen that, commercially, the latter kind is first-rate, whilst the former is barely second-rate. *Héricart de Thury* is simply a good hardy kind, well adapted for early forcing, as it sets freely.

The fact of "J. S. W." having seen badly-grown Strawberries in Covent Garden does not prove that the bulk of the fruit sent there is inferior. Some of the worst samples I ever saw for sale were from private establishments, and yet I should be sorry to assert that private growers, as a rule, do not know how to grow Strawberries. A moment's reflection must suffice to convince "J. S. W." that he has entirely reversed the order of things, and that the best Strawberries are more likely to be furnished by those who devote their whole time and resources to this branch of fruit culture than by growers in private establishments. I am acquainted with one market garden in which nothing but forced Strawberries are grown in the glass structures. For forty years has this industry been carried on there, and your readers may believe me when I state that the quality of the fruit grown in that establishment cannot well be surpassed. If "J. S. W." wishes to be classed amongst those who grow first-rate sorts, he has been unfortunate in selecting such kinds as *Héricart de Thury* and *Black Prince*; the latter variety scarcely pays for the labour of watering. Let me recommend "J. S. W." to substitute for them *Keen's Seedling*, *President*, *Alice Mande*, or *Sir C. Napier*, kinds which may not be so easy to grow, but which, when well-ripened, are highly flavoured. With respect to the last-named variety,

allow me to state that if he will only grow it well he can entirely eliminate the acidity of which he complains. Out-of-doors it is true that it seldom acquires a good flavour, but under glass it may be so grown as to be almost as luscious and rich as the British Queen. Let any reader of *THE GARDEN* try the experiment, and they will, I am convinced, form a high opinion of this Strawberry, and will prefer it to most other kinds.

To those who may wish to grow for profit, allow me to give the following advice: Grow only the kinds which are in demand in the market, and ripen and finish off the fruit well before gathering it; the neglect of these two points has been the cause of more than one person finding Strawberry forcing unprofitable. The berries must not only be large, but they must be highly glazed, bright in colour, and of good flavour. Whoever takes such fruit into the market will have no difficulty in finding purchasers, and will obtain the best prices for it. Three or four shillings a pound make a vast difference in a cwt. of fruit, and there is quite that difference between sour, badly-coloured fruit and that which has been carefully finished off. There is only one way of making market gardening profitable, and that is to grow really good fruit. JOHN CORNHILL.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Exposing Strawberries to the Sun.—My remarks (p. 350) on this subject have been misunderstood by "Cambrian." What I meant was that indoor Strawberries gathered in a sieve, and placed for a time in the sun were more palatable than those freshly gathered in a moist house and immediately sent to table. The same applies also to Peaches, Melons, Figs, and similar fruits. If "Cambrian" kept his basket of Strawberries all day on a shelf under glass, subject to the influence of a fierce sun, he has himself alone to blame for the result. Having a surplus of Strawberries on Tuesday, the 6th inst., and a large demand for them on the Friday following, those not required on Tuesday were placed on the roof of a Pine stove exposed to the sun for a time, when they were removed to a cool dry fruit-room, and, along with others, sent to table on the day named, when they were quite as good-looking, and certainly better flavoured, than those freshly gathered. In support of this I may add that I never allow the plants to be watered or the houses to be syringed on the same day on which the fruit is gathered.—J. COWEYRN.

Apples for Market in North Yorkshire.—North Yorkshire is not an Apple-growing district, but some good Apples, grown in the Cleveland district, appear in the Stockton and Middlesbrough markets. In the autumn we have quantities of Hamburgh Apples, which keep inferior-grown fruit out of our markets, but good samples of English fruit at fair prices are in demand. About Yarm, where both soil and situation are favourable, considerable numbers of different kinds of Apples are grown, but Codlins are most frequently met with in market gardens; Lord Suffolk will, however, soon take the place of Codlins in this district. Rosehill Pippin is a local Apple of considerable merit, being handsome and of good quality; Dumelow's Seedling, or Wellington, does well, and is much esteemed; Nancy Jackson is a fine market Apple, but it appears to me the same as the Old Pearmain; Cockpit is, perhaps, the most generally grown Apple in Cleveland. The tree is hardy and free bearing, but the fruit is too small for market; the new Cockpit, however, bears good-sized fruit, and appears equally free-bearing. Amongst other sorts not generally grown, but of which good samples are seen in the markets, may be named Emperor Alexander, Warner's King, Collini, and Brabant Bellefleur. Ecklinville produced fine fruit on young trees here, and I am of opinion that it will prove a standard autumn Apple in Cleveland.—CHARLES McDONALD, *Stokesley*.

Grapes from Vines Raised from Eyes the Same Year.—I ought to have stated (p. 374) that, according to reports, good crops of Grapes have been grown, ripened, and gathered on this plan. Speaking from memory, I think it was Mr. Hardy who first accomplished the feat before he went to manage the gardens belonging to the Pasha of Egypt. I think the Vineries were built, planted, and a crop of Grapes ripened in them within the year; and to the best of my recollection the fruit was exhibited either before the Royal Horticultural Society, or sent to Dr. Lindley, who at the time drew special attention to the plan adopted in growing it. If I am in error, I hope some of your correspondents, who must remember the circumstance as well as myself, will correct me. These remarks will, I hope, dispel Mr. Groom's doubts on the subject, and I may state that the question as to the utility of the plan was not raised by me, but by Mr. Groom himself. I only recorded a fact, and I do not suppose the general readers of *THE GARDEN* measure the interest

of any circumstance that may be related by its general utility or practicability. I trust Mr. Henderson, of Thoresby, will record his experiences in the matter, as Mr. Groom suggests.—J. S. W.

RAPID PINE GROWING.

1.—The following is a list of Pine-apples cut from a pit planted with rootless suckers from 12 in. to 18 in. high on May 16, 1874:—

Date.	No.	lb.	Date.	No.	lb.	Date.	No.	lb.
July 18, 1875	1	4	Sept. 10	1	6	Nov. 5	1	7
18	1	4	10	1	6	6	1	7
26	1	4	12	1	6	6	1	7
26	1	4	14	1	7	9	1	6
27	1	4	16	1	6	9	1	7
27	1	5	16	1	7	9	1	6
27	1	5	16	1	5	9	1	7
28	1	4	25	1	6	9	1	6
28	1	4	30	1	5	9	1	6
31	1	4	Oct. 3	1	6	9	1	6
Aug. 2	1	5	3	1	7	12	1	7
2	1	5	20	1	6	12	1	5
3	1	5	20	1	6	12	1	5
5	1	6	20	1	6	12	1	5
5	1	6	26	1	5	16	1	5
6	1	5	26	1	5	16	1	5
6	1	5	26	1	5	17	1	6
10	1	5	26	1	6	17	1	7
14	1	5	27	1	6	18	1	7
Sept. 3	1	6	27	1	6	18	1	4
3	1	6	27	1	6	18	1	5
5	1	6	27	1	7	24	1	5
5	1	5	Nov. 1	1	7	24	1	4
7	1	7	1	1	8	24	1	6
7	1	7	1	1	8	24	1	7

2.—The following were produced by rootless suckers taken off old stools on January 19, 1876, and the fruits were cut on the dates subjoined:—

Date.	No.	lb.	Date.	No.	lb.	Date.	No.	lb.
July 23	1	5	January 13	1	4	February 25	1	3
August 15	1	5	19	1	4	March 9	1	4
15	1	5	19	1	6	9	1	3
24	1	4	19	1	5	9	1	3
24	1	4	20	1	5	13	1	3
24	1	5	26	1	4	15	1	4
Sept. 9	1	4	26	1	3	15	1	4
Dec. 9	1	5	31	1	3	15	1	5
15	1	6	31	1	3	19	1	5
15	1	6	31	1	6	22	1	4
15	1	6	31	1	5	31	1	5
19	1	5	31	1	5	31	1	4
21	1	6	February 2	1	6	April 7	1	3
22	1	5	18	1	4	23	1	5
22	1	5	18	1	4	24	1	3
28	1	4	18	1	3	28	1	3
29	1	4	23	1	3	May 7	1	3
29	1	4	23	1	3	7	1	2
29	1	4	23	1	3	19	1	6
January 5, 1877	5	5	23	1	4	19	1	5
5	1	5	23	1	4	19	1	5
13	1	7	28	1	4	29	1	5
13	1	6	28	1	3	29	1	5
13	1	6				29	1	5

The above is the produce of suckers taken from the plants in list 1 and planted in the same pit.

3.—Pit, planted on August 30, 1877, with rootless suckers from old stools, the first fruit being cut on June 20, 1878, and the rest according to date:—

Date.	No.	lb.	Date.	No.	lb.	Date.	No.	lb.
June 20	1	4	August 17	1	4	Nov. 25	1	5
August 3	1	4	21	1	4	25	1	5
5	1	4	21	1	4	26	1	7
5	1	4	21	1	3	26	1	6
5	1	4	21	1	5	29	1	7
5	1	4	21	1	3	29	1	6
10	1	5	21	1	3	Dec. 2	1	6
10	1	5	21	1	4	2	1	9
10	1	5	30	1	3	2	1	8
10	1	5	30	1	4	2	1	5
10	1	4	30	1	5	3	1	5
10	1	4	30	1	4	3	1	5
10	1	3	31	1	4	14	1	8
12	1	4	Sept. 4	1	3	20	1	5
12	1	4	October 15	1	6	30	1	4
12	1	5	25	1	5	30	1	4
12	1	5	Nov. 9	1	6	30	1	4
12	1	4	11	1	7	30	1	4
12	1	4	16	1	7	30	1	5
12	1	3	16	1	6	January 23, 1879	1	4
12	1	3	19	1	6	23	1	4
12	1	3	20	1	5	28	1	4
17	1	5	22	1	7	28	1	4
17	1	5	22	1	4	28	1	4
17	1	4	23	1	5			

The above is the produce of suckers from the plants in list 2, and planted in the same pit. Now I have a very fine lot of suckers

from the old stools of list 3, which will be planted in the same pit as soon as it is ready.

4.—A Pine pit planted with rootless suckers on February 7, 1878, produced the following results, the first fruit being cut on July 6, and the rest in succession:—

Date.	No.	lb.	Date.	No.	lb.	Date.	No.	lb.
July 6	1	64	Dec. 3	1	54	January 3	1	54
23	1	6	9	1	72	6	1	6
27	1	44	14	1	72	6	1	54
27	1	44	19	1	72	6	1	74
27	1	44	19	1	84	9	1	74
27	1	54	19	1	42	9	1	64
27	1	4	19	1	54	9	1	44
27	1	44	21	1	72	13	1	44
August 1	1	44	21	1	72	15	1	44
6	1	42	21	1	74	15	1	54
6	1	44	21	1	64	15	1	54
6	1	44	21	1	7	17	1	64
6	1	38	21	1	44	20	1	74
6	1	44	24	1	64	21	1	44
27	1	4	24	1	5	21	1	54
27	1	32	24	1	44	24	1	44
October 22	1	44	27	1	72	28	1	34
Nov. 7	1	7	27	1	54	28	1	34
8	1	73	27	1	54	February 1	1	3
12	1	74	27	1	44	15	1	54
22	1	6	27	1	64	17	1	54
22	1	42	27	1	54	19	1	54
23	1	7	1879.			19	1	44
27	1	44	January 3	1	54			

The pit in which these were grown is of the same dimensions as the other, and contained the same number of plants; four fruits in it did not ripen, and one plant did not start. The list is merely given to show what can be done in twelve months. M.

Artificial Heat for Vine Borders.—"As proof," says "S. D." (p. 373) "that good Grapes may be grown without artificial heat, I send you a couple of leaves!" I would respectfully submit that fruit is in question, not leaves, and if your correspondent wished to prove that early Grapes could be grown to perfection without protected borders, I think, in common reasonableness, he ought to have sent you fruit as well as leaves, even though it is now getting well on for midsummer, and explained as well if his Vines were planted inside or outside, and other necessary particulars. If leaves are reckoned "proof" of a crop of fruit, I claim to have beaten your correspondent, and, in confirmation thereof, send a sample of leaf, 16 in. by 16 in., from Black Hamburg Vines that are now stoning their berries, and which have for years been treated with fermenting materials. I have often, indeed, had leaves nearly 18 in. each way, and the colour and texture, as will be seen, is not amiss.—J. S. W. [The leaf sent fully bears out all that "J. S. W." asserts in reference to this matter.]

EFFECT OF LOCAL INFLUENCES ON GARDEN CULTURE.

A FEW years ago my plant houses were affected for a season similarly to those of "E. T." (p. 356). Everything sickened and turned yellow, and as I had made no change, except as regards the water, to that my gardener attributed the disaster. Owing to a droughty summer, he was obliged to have recourse to the water company's supply, which contained bi-carbonate and sulphate of lime in solution in considerable quantity. Whether it was these impurities, or the fact of the water being applied to the plants often direct from the mains, and consequently below the temperature of the houses, or both, that induced ill health I cannot tell, but on providing a larger store tank for rain water the plants soon began to recover themselves; it took however, a second season before the effects passed off completely, especially as regards Camellias and Azaleas. I may state that my garden was within 3 miles of a manufacturing town of 200,000 inhabitants, and in one of the largest chemical and lead-producing districts of the kingdom; nevertheless, we had no difficulty in getting very satisfactory results in plant culture, with the just-named exception.—T. B.

—In compliance with the request for further particulars of some of your correspondents, who have kindly replied to my previous letter (p. 386), I may state that the garden is situated about half way between Birmingham and Leamington, on rather high ground with a heavy clay subsoil, and is exposed to the south-west wind; the air of the district is very pure. I think it may be assumed that defective ventilation is not the cause of the mischief, nor fumes from paint, &c., which could scarcely permanently affect Chrysanthemums grown under glass only when young. Excepting a trial of Carson's paint on one range, the best lead paints only have been used. Some of the houses have been built fifteen years, but the deficient growth was first noticed in

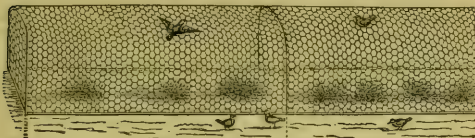
the Chrysanthemums about seven years ago, since which time the number of affected plants has gradually increased up to the present time. The influence shows itself in arrested growth of the foliage, which, I think, is the part first affected, for upon examination the roots generally appear to be healthy, though in turn the imperfect development of the leaves re-acts on the roots, and their growth is arrested. Then the deficiency of root action renders the soil stagnant, and the utmost care has to be exercised to avoid making matters worse by untimely watering. The plant does not die, but languishes in a weakly condition favourable to the attack of insects. Newly potted plants are slow in starting, and newly purchased plants are difficult to establish. No fungoid growth is observable, and although I have not examined the tissues microscopically, my knowledge of the microscope leads me to think that its ordinary powers would not reveal the cause of the disturbance; however, I will make the suggested examination. I fear chemical analysis of the soil will be of little use, for having tried many soils from various districts with the same results, it can scarcely be a question of the relation of its inorganic compounds, and organic matter is difficult to discriminate; if anything organic be the cause, from the peculiarities of the case, it must be assumed to be a local infection; the separation of this from the other components of the soil would be beyond the powers of the most accomplished chemist. At one time the only admissible explanation seemed to be the wilful or negligent mixing with the compost or water of some deleterious matter; but, after careful examinations and many precautions, I concluded that the idea had no foundation. Noxious fumes from factories must be so diluted, if they reach one at all, as to be inert; besides, plants grow quite satisfactorily in the immediate neighbourhood of Birmingham, which emits the most varied fumes, and is in close proximity to the Black Country. I fear even the good gardener, whose observations have been limited to the ordinary results of efficient and deficient cultivation may not possess the special knowledge necessary to enable him to elucidate the mystery; my only hope is that some one who has had a similar experience may be able to give an explanation.—EDMUND TONKS, Packwood.

—Mr. C. W. Quin is surely wrong in blaming our Warwickshire manufacturers for "E. T.'s" failures. He ought to come to Birmingham and see the collection of plants in our Botanic Garden; also the Primulas grown by Mr. Tomkins, and his Maréchal Niel Rose tree with hundreds of bloom on it—both places within a mile or so of various chemical and other works, and quite near a forest of chimneys. All around this smoky town, too, are numbers of amateurs who grow plants of a very delicate kind very successfully.—F. BANKS, 149, Warstone Lane, Birmingham.

—Theoretical knowledge, such as that which "E. T." states he possesses, is almost invariably fatal to success when not accompanied by practical experience. It is only by means of sound knowledge as regards the routine of cultivation that the operator is enabled to know how far to go and when to stop in shaping his practice in accordance with theoretical deductions. "E. T." requires no further answer than the advice given by "Chef" and "J. M." If he already has, or will get, an intelligent, experienced gardener, and tell him fully and exactly what he requires, allow fair means for carrying out the work, and patiently await results, giving a kindly word of encouragement to try again in cases of failure, I have no doubt that he will very soon see an improvement in his garden such as will surprise and satisfy him. Mr. Quin's conjectures as to the cause of "E. T.'s" failures will not bear the test of a moment's reflection by any one who has ever seen and noted the innumerable examples of successful gardening in the case of a large number of the usually cultivated plants in close proximity to the manufacturing districts, and still less by any one who, like myself, has lived and been engaged for over twenty years within ten miles of Manchester, and for some half-dozen years of the time between that smoke-begrimed city and Stockport, where the wind, when blowing from three out of the four points of the compass, is laden with smoke and noxious gases arising from a variety of manufactures. Soil and air combined make the cultivation of many kinds of plants out-of-doors in this and similar places an impossibility, but not so such as are grown under glass, although even with the latter it is uphill work, inasmuch as everything requires great labour and attention, if only to keep their leaves washed and the glass clear from soot accumulations. Within half-a-dozen miles of Manchester there can be seen collections of Orchids, hard-wooded stone and green-house plants, Azaleas, and Heaths, together with Fuchsias, Pelargoniums, and hundreds of other plants not surpassed, if even equalled, by any in the kingdom; the same, too, holds good with culinary vegetables and fruits grown under glass. This is so well known by all connected with horticulture who move about the country as not to need mentioning, and no more instructive lesson in gardening can well be learned than is derivable from a ramble through the collection of plants grown in the Manchester district. From an intimate

acquaintance with the neighbourhood, I feel convinced there is not anywhere to be seen more conclusive evidence of the inherent love of gardening existent in human nature than is here exemplified both amongst employers and gardeners. The results of gardening around this great manufacturing centre have a direct bearing upon the case, which has given rise to these remarks in showing what it is possible to accomplish where there is union of feeling and a perfect understanding between employers and their gardeners, without which there can never be very much accomplished, either satisfactory to the former or that will reflect credit upon the ability of the latter.—T. BAINES.

Messrs. J. B. Brown & Co.'s price list, just received, contains illustrations of wrought iron hurdles, bar iron and wire fencing, carriage entrance and wicket gates, galvanized wire netting, seed and



Galvanized Wire Strawberry Guard.

Strawberry guards, Pea supports, French system of iron and wire fruit trellises, wiring for garden walls, wrought iron tree guards, lawn mowers, garden engines, rollers, pumps, lawn seats, cast iron



Galvanized Wire Pea Trellis.

vases, and many other garden appliances. It also contains an eyed straining trellis screw, with nut for tightening French trellis work, said to be better than the *raisisseur*. The list is excellently printed and has many engravings, far more delicately done than those which usually embellish catalogues.

PROPAGATING.

FERTILISING FLOWERS OF THE CHINESE PRIMROSE.—It is a curious fact in relation to all the members of the *Primula* family, whether tender or hardy, or from whatever clime they may come, that most of the flowers are pin-eyed, that is, have the stigma projecting beyond the pollen anthers, and in many cases even beyond the throat of the flower. This feature is less marked, or indeed entirely absent, in show Auriculas and Polyanthus; but these have been selected during many years' careful watching from myriads of seedlings, three-fourths of which were pin-eyed. If seed of these be saved from high-class thrum-eyed flowers, the results just indicated will inevitably follow. This is a fact at once curious and inexplicable but for the probable reason that there is a tendency in all newly-raised florists' flowers to revert to the original wild form in which the pin-eye is invariably green. It is a moot point whether the pin-eyed flower forms the best seed parent if left to Nature's operations or not, but in the Chinese Primrose the majority of plants produce pin-eyed flowers, although in this case the defect, if it be one, is much less noticeable than is the case with Auriculas and with the Polyanthus. As with the Chinese Primula it is absolutely necessary that it be annually raised from seed, so is the production of seed of the greatest moment. Those who make seed growing a speciality find that it is necessary during the winter months to use a small camel-hair brush freely, to bring the pollen from the stamen to the stigma, and thus promote fertilisation. The late Mr. Windebank, of Southampton, who used to have a collection of some twelve or fourteen kinds, always employed a different brush for each sort, in order to secure distinctness, and he was most successful. Others adopt the

practice of pulling the flowers, so that the pollen may be deposited on the stigma in its upward passage—a doubtful remedy, as the pollen is more likely to be retained on the under side of the stigma than on its pin-head surface. Where bees can get at the flowers they will fertilise them freely, but the best results are got from thrum-eyed flowers, in which the stigma is placed just below the anthers, and where some of the pollen is sure to fall upon it. It is absolutely necessary that the atmosphere should be fairly dry during the period of fertilisation, otherwise the pollen will be of no value.—A. D.

ANSWERS TO CORRESPONDENTS.

Syringing Vines.—Ought Vines to be syringed with water from now until the fruit begins to change colour? or had the house better be kept quite dry, and merely the Vines roots outside moistened by watering the border? The hunches are just showing. No heat is used except from a fire at night to prevent damage from frost. My Vines suffered badly from mildew two years ago, which killed every berry, and last year the crop was small.—J. H. W. [If you keep the floors and walls of the Vinery moist you need not syringe the Vines themselves. Much has been said in favour of syringing Vines, much against it, but all that has yet been arrived at is that equally good Grapes can be produced either way. As, however, your Vines are subject to mildew, merely keeping the floors moist will suffice, and this must be discontinued on the first appearance of that Fungus. Ventilate freely, avoiding draughts, leave no more foliage than can be exposed to light, and regulate the crop according to the amount of foliage. A little fire-heat at night will do good, as then you can leave on a little air at top. As soon as you discover mildew paint the hot water pipes with sulphur, and at once remove affected leaves or berries.—S.]

Outdoor Camellias.—Kindly name a few of the handsomest of hardy Camellias, and also say whether or not Lady Hume's Blush is suitable for outdoor culture.—C. B. [Nearly every kind of Camellia will succeed out-of-doors under favourable circumstances. Lady Hume's Blush is one of the best which could be used for that purpose; other kinds might consist of the old Double White (*alba-plena*), Beall, Donckelaer, imbricata (red), Marchioness of Exeter, Reine des Fleurs, and Wilderi.—CAMBRIAN.]

Greendey on Roses.—What are the best means of destroying the small green fly which infests Roses? I tried strong Tobacco water last year and constant brushing off with a white feather, and could not get rid of countless numbers of these pests.—H. S. G. [First wash the insects off as far as possible with water applied with force by means of a good syringe. Then, again, dry syringe with a solution of Quassia chips, boiled in soft water, at the rate of 4 oz. to the gallon, in which may also be dissolved 4 oz. of soft soap. The ends of the shoots most affected may also be dipped in this solution.]

Herbaceous Calceolarias.—We have at present a fine show of these in our conservatory. They have been in flower since early in the year, but have had great care and attention. They have been very early this year, at least as far as we are concerned, as we have had them well in flower for three weeks, and they promise to finish their three months of bloom. The plants vary from 1 ft. to 1½ ft. in height, and measure some 2 ft. across. I send you some blooms of them for inspection.—M. G. [The blooms sent are large, finely spotted, and good in form—altogether what would be called a good strain.]

Saxifraga flagellaris.—In "Notes from Kew" (p. 329) I see mention made of a plant with this name. I have never met with the plant, and I am sure that it must be scarce. Does it differ from *S. arachnoides* described by Haworth?—TROS. WILLIAMS. The plant in question is the true *S. flagellaris*, of Sternberg. Though as yet rare in cultivation, it has, however, been grown at Kew for some years. It comes from Arctic North America.—W.]

Rose Petals.—Are these saleable anywhere in London?—A. B. [Freshly-gathered petals of fragrant Roses like the old *Cabbage*, in quantities of 1 cwt. or more, are bought by wholesale druggists and also by the herbalists in Covent Garden, but Rose petals when dropping have lost their fragrance and are of no value.—P.]

Salisfly Seeds.—Will these grow the second season?—MAGNUM BONUM. [Yes, if they have been kept airtight, and were good in the first place, but we should prefer fresh seeds.]

Rose Celeste.—"C. R." (p. 360) inquires triumphantly who cultivates this Rose? Allow me to inform him that I do, and that I have done so for years. This old Rose is a most determined coloniser, and hard to extirpate, should any one be so ruthlessly inclined. "C. R." has tolerably well described it, and I may add that in the bud it is a very jewel among Roses.—THOMAS WILLIAMS, *Grosvenor*.

Camellias in Orchard Houses.—We have a large double white Camellia planted in a cool orchard house which is only heated sufficiently to keep out the frost. The tree is very healthy, and is every season covered with buds, but the young wood is made before the buds open, and when the young shoots are 3 in. or 4 in. long, and the buds have swelled to the size of Walnuts, they mostly fall off and very few come to perfection. It is planted in a good light near the glass, and receives plenty of water. Would it do better taken up and potted so that it might have more heat? If so, at what time should that be done? or can any other plan be suggested?—M. A. E. [The case of the Camellia in any question not flowering is probably due to its being placed in a too warm atmosphere and watered too freely just before the expansion of the flower buds, thus prematurely exciting the leaf buds into growth. Try cool and airy treatment, and give it less water till after the flowers have fallen.—J.]

Names of Plants.—*R. H.*—1, *Frutillaria Melegria* alba; 2, *Pencion pulchellum*. *Mz. M.*—Double variety of *Anemone coronaria*. *W. C.*—*Belle de Chateaufort* Violet. *W. D.*—*Sonchus pinnatus*. *W. C.*—*Omphalodes verna*. *H. & Co.*—*Anemone nemoralis* l-pl. *X. Y. Z.*—*Amelanchier canadensis*. *F. H. H.*—*Saxifraga hypnoides*. *W. C.*—*Eupatorium ageratoides*. *W. M. S.*—1, *Brassia verrucosa*; 2, *B. maculata*.

Questions.

Vicomtesse Hericart de Thury Strawberry.—Not being sure as to having the true variety of this, and wishing much to get it in the best of the right kind for forcing, I should be glad if some of your correspondents will kindly state what are its distinguishing features. Those I have retain the petals till the aut is far advanced, and to one's thinking would turn out indifferent setters, as the anthers appear bare of pollen and are not pushed out well over the fruit.—S.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

MAY 13.

THE exhibits at this meeting, though not very numerous, and consisting chiefly of miscellaneous groups, contained many plants of great interest, both as regards rarity and novelty. The numerous and choice collections of Messrs. Veitch & Sons, B. S. Williams, and others, the superb cut blooms of Roses from the Waltham Cross and Cheshunt Nurseries, Mr. Dean's Primulas, and the Daffodils from Messrs. Barr & Sugden formed leading features, which were much admired on account of their general excellence.

First-class Certificates were awarded to the following plants:—

Ranunculus Lyalli (Veitch).—A beautiful and rare New Zealand Crowfoot, having peltate root leaves of a leathery texture, and flower-stems of about 1 ft. high, branching and bearing flowers $2\frac{1}{2}$ in. across, saucer-shaped and pure white, with a central tuft of golden-yellow stamens.

Arnebia echioides (Elwes).—A rare and very handsome, perfectly hardy Boragewort, from Asia Minor, with lance-shaped root-leaves, and dense clusters of funnel-shaped flowers $3\frac{1}{2}$ in. across, bright yellow, with a black spot between each division of the corolla, gradually fading to pale brown, and at length becoming quite obliterated.

Primula acaulis Golden Gem (Osborn).—A pretty variety of the common Primrose, with flowers of a much darker shade, and borne very freely.

Polyanthus Prince of Orange (Dean).—A very bright yellow-coloured and free-flowering kind of the Hose-in-Hose type.

Begonia Comtesse de Choiseul (Laing).—A fine double-flowered variety with delicate bluish-tinted blossoms of fine form.

Azalea mollis var. Conte de Gomer (Veitch).—A pretty variety and an abundant bloomer, the flowers being produced in large clusters, and of a rich salmon colour.

Dracena superba (Williams).—An elegant hybrid of graceful habit with rather narrow leaves, the lower ones of a deep metallic lustre, the upper of a rich magenta tint.

Croton Princess of Wales (Veitch).—An extremely ornamental variety with narrow spirally-twisted and gracefully arching leaves from 1 ft. to $1\frac{1}{2}$ ft. long, beautifully variegated with creamy-yellow and various shades of green.

Amaryllis Mrs. Morgan (Williams).—A superb variety with large blossoms of fine form, of a deep rich crimson colour, margined with pure white.

Cupania elegantissima (Williams).—A fine decorative plant with pinnate leaves, resembling many of the Cycads.

Azalea pontica var. narcissiflora (Veitch).—A handsome yellow-flowered novelty aptly named, as its long tubular blossoms, widened at the mouth, strikingly resemble the flowers of several of the large kinds of Daffodils.

Selaginella Kraussiana aurea (Donaldson).—A golden-leaved form of this well-known kind, and one very desirable for the sake of variety.

Miscellaneous Groups.—Messrs. Veitch & Sons staged an effective mixed group of plants, to which a silver-gilt medal was awarded. Amongst these were Rhododendron Maiden's Blush, a pretty hybrid bearing terminal clusters of tubular blossoms, with a spreading corolla $1\frac{1}{2}$ in. across, of a delicate bluish tint; R. Duke of Edinburgh, another beautiful variety, also of the greenhouse class, with flowers somewhat smaller and of a deeper hue than those of the preceding; Cypripedium selligerum, a fine hybrid, the result of a cross between C. barbatum and C. levigatum; its flowers, which are considerably larger than those of the former, have the distinct markings of the latter. Along with these came Dendrobium Rhodostoma, a beautiful hybrid between D. Huttoni and D. sanguinolentum. The collection also contained the handsome Epidendrum Wallisi in a fine flowering condition; also Dendrobium thrysiflorum, Cattleya Mendelli, Odontoglossum cirrhosum, and others. Dioscorea retusa, a graceful greenhouse climber from South Africa, has small flowers borne profusely in catkin-like clusters from the axils of each leaf. Hemanthus cinnabarinus is a fine bulbous plant with immense clusters of orange-scarlet blossoms. Coleus Lord Palmerston is a very distinct kind with purplish-red leaves, edged with green. The same exhibitors also showed the lovely Crinum Macowanii, a variety in the way of C. amabile, but much finer, the flowers being of a deeper shade. Mr. B. S. Williams exhibited a choice selection for the most part consisting of beautiful hybrid Dracenas; also the highly ornamental D. Goldianna and D. lertiginosa, the latter a very

elegant plant with narrow bronze-tinted leaves, very graceful in habit. Adiantum Williamsi is a pretty new Maiden-hair Fern with the pinnae scarcely at all incised, and of a pea-green tint. The very handsome Brazilian shrub, Glomera jasminiflora, was staged in such a condition as fully justified the high encomiums that have been passed upon it, as the specimen shown was nearly 3 ft. across and literally covered with clusters of snowy-white Bouvardia-like blossoms, which admirably contrasted with the rich green foliage. This group was also awarded a silver-gilt Banksian medal. Mr. Wills had a tastefully-arranged group of plants, consisting chiefly of Azaleas, Palms, Caladiums, and Gloxinias, many of the latter being remarkably fine; for these a silver Banksian medal was awarded. A similar medal was awarded to Messrs. Lee, of Hammersmith, for a well-arranged collection. Messrs. Osborn & Sons contributed an effective group, amongst which we noticed the charming little Chilean plant Sarmienta repens, which makes such a capital basket plant for a cool, moist greenhouse. Mr. J. Aldous sent some fine-foliaged and flowering plants, which received a vote of thanks. Roses, in the shape of cut blooms, came from Mr. Wm. Paul, Waltham Cross, to which a silver Banksian medal was awarded. A fine collection also came from Messrs. Paul & Son, of the Cheshunt Nurseries, the Tea varieties in which were particularly good. Of Pelargoniums a well-grown group was exhibited by Messrs. Hayes, Edmonton, consisting of Prince of Wales, Fair Maid of Kent, and Duchesse de Moreau. The same exhibitors also staged numerous well-grown examples of a choice strain of Cinerarias, which received a silver Banksian medal; an excellent lot of Erica ventricosa also came from the same exhibitors.

Hardy Flowers.—A highly interesting exhibition of terrestrial Orchids was contributed by Mr. Green, gardener to Sir G. Macleay, Pendell Court, Bletchingley. It consisted of several unnamed kinds of Ophrys, the rare O. Speculum, with a flat lip resembling a metallic-like mirror, edged with rich brown velvet; the yellow-flowered O. lutea and the curious O. aranifera; Orchis tephrosanthos, with bluish-tinted blossoms with deep anemone lip, was also very fine; Dipodium punctatum, a curious Australian species, with violet-purple flowers spotted with a darker shade, was also shown. A fine basketful of the beautiful Gentiana acaulis came from Messrs. Osborn & Sons, to which was awarded a medal. As usual, Messrs. Barr & Sugden made an excellent display with Daffodils, which, besides the older kinds, contained several new and good varieties. This group was enlivened by cut blooms of Anemone fulgens var. multipetala, the blossoms of which are of a deep scarlet colour. A silver Banksian medal was awarded to Mr. Dean for a superb group of varieties of Primula acaulis, many of the newer kinds in which were strikingly beautiful; laciniata, with elegantly cut petals, deep rose and pure white coloured, the lavender-tinted Mauve Beauty, purplea, and lilacina were especially noteworthy. A similar medal was awarded to Lily of the Valley Victoria, exhibited by Messrs. Hawkins & Bennett, Twickenham. This is a decided improvement on the original, being more robust in habit, free flowering, and having the flowers a shade larger. Messrs. Veitch & Sons staged a very effective display of Azalea mollis, with flowers varying from almost white to deep yellow and orange-scarlet. These were interspersed by Japanese Maples, with their finely-cut and metallic-hued foliage, and also by numerous well-bloomed examples of hybrid Clematises, amongst which a doubled-flowered kind, Countess of Lovelace, with deep purple blossoms, was very fine. The best of the light-coloured single-flowered kinds were Fair Rosamond, Miss Bateman, Lady Lonsborough, and a very deep purple-flowered variety called Duke of Edinburgh. This group was justly awarded a silver floral medal. A group of Rhododendrons was shown in fine condition by Messrs. Lane & Son, Berkhamstead, and received a silver floral medal. Mr. H. Boller exhibited an interesting set of Cacti, consisting chiefly of Mamillarias, of which M. filifera and M. formosa were highly commended. The rare Lowiana variety of Vanda ceruleoscapa was exhibited by Mr. Heims, gardener to E. A. Philbrick, Esq., Avenue Road, Regent's Park. It differs from the type and the variety Bosalli in having pure white flowers with a violet-purple lip. Cultural commendations were awarded to Mr. Reeves, gardener to C. Hart, Esq., Lee, for Odontoglossum vexillarium, with seven flower-stems; also for a large-spathed form of Anthurium Scherzerianum, and a very finely-flowered variety of Masdevallia Veitchii. Mr. Green showed cut blooms of the curious Gongora portortosa and Alpina nutans; also Crinum ornatum. Mr. C. Turner contributed cut blooms of Tree Carnation A. Alegatiere, a kind with deep scarlet Camellia-like blossoms, 3 in. across.

Fruit.—This was but scantily represented; it comprised Melon Davenham Early from Mr. Jacques, Davenham Bank, a novelty to which a first-class certificate was awarded. Figs (Brown Turkey and Grosse Monstreuse de Lipari), which received cultural commendation, were exhibited by Mr. Pratt, Hawkstone Gardens, Shrewsbury. Apple Duck's-bill came from Messrs. Coleman, Brede, Sussex.

No: 592.]

SATURDAY, MAY 24, 1879.

Vol. XV.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

HYBRIDS OF SIEBOLD'S PRIMROSE.

THESE most beautiful, easily cultivated, and free blooming hybrids of the fine Japanese species, commonly but, I think, erroneously known as *Primula cortusoides amena*, figured in the "Botanical Magazine," vol. xci., t. 523, and which I venture to think, with others better entitled to form an opinion than myself, should rather bear the name of P. Sieboldi, have been raised and sent out by two well known firms of florists, viz., M. Victor Lemoine, of Nancy, and Messrs. Dean, of Ealing. Each firm has distributed previous to this year some half-dozen varieties, all of which bloomed well in my greenhouse during the month of April and the latter half of the preceding month. The names of M. Lemoine's varieties are, 1, *Clarkieiflora*; 2, *vinceflora*; 3, *lilacina marginata*; 4, *fimbriata oculata*; 5, *violacea*; 6, *alba lilacina fimbriata*. Those sent out by Messrs. Dean are, 1, *cerulea-alba*; 2, *cortusoides lacinata*; 3, *lilacina perfecta*; 4, *Mauve Beauty*; 5, *maxima*; 6, *purpurea*. As to the parentage in the way of crossings or fertilisation of the French hybrids, I have little or no information, except that the pollen almost invariably used to fertilise with was that of the species *cortusoides*, which is a native of Siberia, and is figured in the "Botanical Magazine," vol. xii., t. 399; and that the seed bearer was probably P. *lilacina*. As to the English hybrids (which I am happy to say seem to me decidedly the finer set of the two, especially as to size and substance of the individual blossoms), Messrs. Dean inform me that the varieties which they have used as parents have been mostly *lilacina* and *grandiflora*, with the blood of *amena* or *Sieboldi*, and that a little seed has also been obtained from P. *Sieboldi alba*, but that they are almost invariably shy seeders, and that the quantity of seed obtained at any time is exceedingly small. The following descriptive notes of some of the best and most distinct of these beautiful hybrids (which every lover of his greenhouse should, as soon as possible, add to his collection if he does not already possess them) may not be uninteresting to your readers:—

1. *P. Clarkieiflora* (L.).—Bloom medium sized, deeply fimbriated, of a fine magenta colour. A very free and profuse bloomer, one of my plants bearing as many as eight spikes. It also produces more pips on the truss than any other variety, some of my trusses having as many as thirteen pips; and it is very quick to increase.

2. *P. lilacina marginata* (L.).—A rather shorter-stemmed variety than the others, with pips rather above the medium size, of which from five to eight are usually found on each truss. The centre of the inside of the flower is pure white, while the margins are more or less deeply flecked with the clear lavender colour of the reverse of the flower. This is a very pretty variety, and, apparently, rather easier to get to seed than any of the others seem to be.

3. *P. fimbriata oculata* (L.).—A profuse blooming, shorter-stemmed variety with pips of much smaller size, opening quite flat and minutely fimbriated. Colour, deep lavender with a clear white eye.

4. *P. vinceflora* (L.).—A very free-blooming variety with shorter flower-stems than most of the others, and having medium-sized pips of fine substance and of a deeper shade of violet than any other, with a distinct white eye. Flowers open, quite flat. An extremely pretty variety.

5. *P. cerulea-alba* (D.).—A very fine variety with pips quite as large as a crown piece; they open quite flat, the inside colour being pure white, while the reverse is of a fine bluish-lavender. From six to seven pips are produced on each truss of this variety.

6. *P. lilacina perfecta* (D.).—The tallest-stemmed of all the varieties, and one which has very large-sized pips, which, however, never open quite flat, but always remain more or less cupped. The ground colour of the inside of the flower is pure white, but almost the whole of it is washed with deep lavender, the colour of the reverse of the flower. There are from eight to nine pips on the truss. An exceedingly fine variety.

7. *P. Mauve Beauty* (D.).—A rather shorter-stemmed variety with good trusses, consisting of from eight to ten pips borne closer together on shorter foot-stalks. The flowers open quite flat, and are of fine substance, the inside colour being the purest white, the reverse pale lavender. A charming variety.

8. *P. Lavender Queen* (D.).—A very fine variety somewhat closely resembling *P. cerulea-alba* above described; the individual pips, however, are rather smaller, and are borne on shorter foot-stalks; consequently they are closer together in the truss.

9. *P. maxima* (D.).—A fine variety with deeply cupped pips, eight of which are usually to be found on each truss. The interior colour is white, the exterior deep rose colour.

10. *P. lacinata* (D.).—A beautiful variety of the same fine deep magenta colour as Lemoine's *Clarkieiflora*, but with much larger and more deeply-lacinated flowers than those of that variety, not, however, so freely produced, only from six to nine being found on each truss, and the flower-stem being also considerably shorter.

M. Lemoine has also sent out this spring five more named varieties of these beautiful plants, named respectively *Beauté*, *Gaieté*, *Joyau*, *Venus*, and *Virginal*. Having only just received these, though some of them were in flower when they reached me, it would, of course, not be fair or fitting to express any opinion as to their merits till next season, when they shall have become established in their new home, and when it is to be hoped they may prove themselves worthy companions of their beauteous brethren above described. There are also two other varieties described by a correspondent in last issue of THE GARDEN, named *Ophelia* and *Allen's Snowflake*, the first-named a deep purple self, and the latter a fine pure white, which, especially the latter, are likely to be desirable acquisitions.

Belgrove, Queenstown.

W. E. GUMBLETON.

WILD FLOWERS FOR THE GARDEN.

IN the present day, when so much of the time and attention of both professional and amateur cultivators is devoted to bedding plants in one form or another, it is hardly to be wondered at that our native British plants do not come in for a fair share of patronage. Mr. A. R. Wallace, who has perhaps travelled through more countries than most living naturalists, has repeatedly called attention to the fact that the floras of temperate climes present more vivid displays of colour and beauty than are to be found in those of tropical lands, and he points out that the erroneous ideas usually held as to the flowers of the Tropics are due to the fact that we are accustomed to see collected together in one house the most brilliant and showy plants from all parts of the world. If exception be made of the wild *Hyacinth*, *Primrose*, and one or two others, it is but seldom that any of our native wild flowers are to be found in any but the garden of the botanist. There are, however, many species that are deserving of cultivation, not only from a botanical point of view, but on account of their intrinsic beauty, and they may often be advantageously used in conjunction with exotics. The *Creeping Jenny* (*Lysimachia nummularia*), one of the best known, is well worth growing. It is by no means an uncommon plant, and may frequently be met with in damp places and by stream sides. For a small rustic basket nothing can be better than this plant, together with a few *Lobelias*, and perhaps a *Fuchsia* or white *Pelargonium* in the centre, the bright blue of the *Lobelia* forming a fine contrast to the golden-yellow blossoms of the *Creeping Jenny*, which are produced abundantly on the long stems overhanging the sides of the basket. Of other creepers, the *Ivy-leaved Toadflax* (*Linaria cymbalaria*) and *Ivy-leaved Campanula* (*C. hederacea*) are both worth growing, though neither of them is so showy as the above. In an open, tolerably dry border, the following are a few species that may be cultivated with advantage, viz., *Geranium sanguineum* (crimson), *G. phœum* (deep purple), *G. pratense* (purple), *Potentilla rupestris* (white), perhaps the most beautiful of our native *Cinquefoils*, and *Potentilla verma*, which forms in May a mat of green, dotted all over with golden-yellow flowers; the common *Rock Rose* (*Helianthemum vulgare*), *Malva moschata* (the Musk Mallow), the *Wood Vetch* (*Vicia sylvatica*), as well as *V. Orobus*, two very graceful plants, but neither of them seems to take very kindly to cultivation. Most of the above thrive in pots in a cold frame. If there be a piece of ornamental water, or a fountain basin, the following will be found valuable acquisitions: The *Marsh Marigold* (*Caltha palustris*), the *Globe-flower* (*Trollius europæus*), the flowering *Rush* (*Rotunda umbellatus*), the *Galinsale* (*Cyperus longus*), a member of the *Sedge* tribe, and one of our most graceful and elegant plants; the *Water Lobelia* (*L. Dortmanna*), and *Villarsia nymphaeoides*, which somewhat resembles a yellow *Water Lily* in miniature. The two latter should be planted 1 ft. under water; the others may be planted on the wet margins of the pond, or in pots about three parts submerged. Some of the plants just named are but rarely to be found wild, but all, or nearly all, may be obtained of dealers in hardy herbaceous plants. Our native *Orchids*, many of which are worthy of attention, must form the subject of a separate paper.

B.

FLOWER GARDEN ARRANGEMENTS.

THERE are many situations where mixed beds, *i.e.*, beds planted with several kinds of plants, may be appropriately placed. The following are a few examples that I have either tried myself or seen elsewhere:—

1. A circle 14 ft. in diameter, consisting of variegated *Pelargonium* Flower of Spring and *Viola Blue Perfection* planted alternately; one standard plant of *Grevillea robusta*, with about 3 ft. stem in the centre; five smaller plants of *Acacia lophantha* 3 ft. from edge, following the line round at regular distances, so that they extend in a circle round the central plant, and about 4 ft. from it, with a band 1 ft. wide of *Alternanthera amabilis* round the outside. This arrangement is always pleasing and attractive. The feathery character of the fine-foliated plants used corresponds well with the lively blue and white groundwork. To be effective *Alternantheras* must be planted thickly, and the soil must be made rich.

2. Oval, 12 ft. by 8 ft., consisting of a groundwork of *Crystal Palace Gem Pelargonium*, with *Lobelia fulgens*, 18 in. apart; good strong plants of the latter only should be used, and they should bear some relation to each other as regards strength, planting the strongest in the centre of the bed. The *Lobelias* like a rich soil and plenty of water, and, under such conditions, are very effective. They must be neatly and securely staked and tied, or the wind may blow them over. All flowers must be picked off the *Pelargoniums*. Two rows of *Lobelia Blue Beauty* or some other good kind round the outside of the bed will finish it off satisfactorily.

3. A bed consisting of a dark-flowered *Heliotrope* with rather small plants of *Abutilon Thompsoni*, mixed in proportion of two of the former to one of the latter. The *Heliotrope* must be pegged down till the bed is well covered and the plants are coming into flower. The *Abutilons* will grow erect, and the yellow-mottled leaves peeping out of the purple *Heliotrope* make a very effective bed, which will be enhanced by having a double row of *Iresine Lindeni* as an edging outside. The mixture is suitable for any shaped bed, but circles or ovals are the most easily planted, and the most artistic in outline.

4. *Mangles Pelargonium* and *Verbena venosa*. This is a very old form of mixture, and also an effective one, which, in the case of an oblong bed of considerable size, has a fine appearance. A double row of *Pelargonium Harry Hieover* plant the outside, and here and there a plant of the dark-leaved *Castor-oil plant* (*Ricinus Gibsoni*) planted about the bed, adds to its effect. The bottom leaves of the *Castor-oil* plants should be taken off to lift the tops well up, and admit light to the plants below.

5. A circle 12 ft. in diameter, consisting of variegated *Pelargoniums* and *Coleus Verschaffelti* planted alternately, and supported by a broad band of *Gibraltar Pennyroyal* outside, with small circles of *Alternanthera* dotted along it at regular distances apart, and one plant of *Dracæna indivisa* in the centre.

6. Circle 10 ft. in diameter planted with tuberous *Begonias* thinly on a groundwork of variegated *Mesembryanthemums*.

7. White *Fuchsia Rose* of Castile on a groundwork of *Iresine hirsuta*.

8. Balsams planted thinly on *Sedum glaucum*.

9. Mrs. Pollock *Pelargonium* and the old mauve-coloured *Viola cornuta* planted alternately.

This list might be extended indefinitely, and might include mixed beds of fine-foliated plants of large growth only, as well as succulents, such as *Aloes*, *Cacti*, and *Echeverias*. Most people have seen at some time or other what a very pleasing group has been made with the odds and ends of plants left after the parterre has been planted; and a group of this kind will fit in wherever a central bed is desired. Pink and white *Pelargoniums*, planted alternately in a large mass, have a very good effect, being soft and pleasing in colour.

E. HOBDAV.

PENTSTEMONS AT HOME.

THE following are natives of California, where, in their wild state, they fill the valleys and cover the hillsides with the gayest of blooms from May to October. Within California and its vicinity there have been found some twenty odd varieties, all fine plants, but I shall only speak of a few of the finest, and which I deem most worthy of cultivation.

PENTSTEMON SPECTABILIS.—This, one of the handsomest species, grows from 2 ft. to 4 ft. high. It is found on dry hillsides, blooms continually from May to October—the drier and more sterile the place the finer the bloom; I have seen it in flower where the ground was as hard and dry as a brick. The flowers are borne in long panicles, often 2 ft. long, loosely many flowered; corolla nearly

1½ in. long, the short tube suddenly expanding into a wide ventricose throat. In colour, the throat and tube are a rich purple, while the lobes are a clear blue.

P. RICHARDSONI grows from 2 ft. to 3 ft. high, and makes a branching, well-shaped plant. Flowers in loose, irregular panicles; corolla with an ample inflated throat, the upper and lower lips widely spreading. Colour, a clear violet throughout.

P. CENTRANTHIFOLIUS.—This, our most showy species, grows from 2 ft. to 3 ft. high, and has panicles from 1 ft. to 2 ft. long. Flower with a narrow tubular corolla over 1 in. long. Colour, a bright scarlet-red. Very dry grounds.

P. MENZIESI.—A fine variety, and one which makes well-branched plants 1 ft. high. Flowers with a gradually expanding tubular corolla ¾ in. long. Colour, from light to deep pink. Flowers in short panicles. Grows in high, dry situations, where it blossoms finely.

P. ANTIRHINOIDS.—A handsome variety, growing from 1 ft. to 3 ft. high. Corolla with a very short tube and wide, open mouth, the upper lip of which is arched, and lower recurved. Flowers borne on single peduncles, terminating leafy panicles. Colour, pure yellow, for which it is remarkable. There is a very near species of the above known as *P. breviflorus*, reported as having a flesh-coloured corolla streaked with pink. Height, shape of corolla, &c., not known.

P. CORDIFOLIUS.—A peculiar variety with long sarmentose branches from 3 ft. to 4 ft. long; scrambles over bushes. Flowers in leafy panicles; corolla with a long, narrow tube 1½ in. long, the upper lip erect, and quite ½ in. long. Colour, bright scarlet.

P. GLABER.—This is the most common species reported from Oregon and eastward of the Rocky Mountains; grows from 1 ft. to 3 ft. high. Flowers in narrow panicles 1 ft. long; corolla from ¾ in. to 1 in. long; tube narrow, opening into an oblong, funnel-form throat. Colour, blue to violet-purple.

P. ROEHLI.—Grows from 6 in. to 1 ft. high, flowers in compound panicles. Corolla ½ in. long, funnel form above the narrow tube. Colour light violet-blue.—"Gardeners' Monthly."

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Pansies and Violas.—I grow great numbers of the bedding varieties of these, and it may, perhaps, be of general interest if I mention some of the characteristic qualities of the various kinds as exhibited here. This year the earliest has been *Golden Queen*, a yellow, much resembling *Dickson's Golden Gem*, but earlier and larger and quite as free. I have *Sovereign*, *Golden Gem*, *Corisande*, *Golden Prince*, and *Cloth of Gold*, but for a spring-beding yellow I give the place to *Golden Queen*. Next in order come (1) *Pansy Blue King*; (2) *Viola Acme* and *Admiration*; (3) *Tory*, *Blue Bell*, and *multiflora*; (4) *Holyrood*, and a host of *Violas* and *Pansies*. The most beautiful *Viola* grown is, in my opinion, *Holyrood*, but I am not sure that it blooms freely enough to be a perfect bedder. As an early spring bedder *Admiration* well merits its name. A very beautiful bed here just now is the following, *viz.*, a circle 12 ft. in diameter planted thus:—(1) an inner circle of *Golden Queen Viola*; (2) two rows of *Tory*; (3) two rows of the pink-flowered *Daisy Anceubolia*; (4) two rows of *Blue Bell*; (5) edging of *Pyrethrum Golden Feather*. For a beautiful summer bed it would be difficult to surpass a mixture of pink *Pelargonium* (says Mr. Halibarton) and *Viola multiflora*; it is barely possible to have a more delicate and charming combination. Its absence of glare and perfect repose is a treat to eyes sore with the garish splendour of modern flower beds. A noteworthy characteristic of this abnormal season is that *Pansies* and *Violas* are earlier than *Daisies*. With us the former are, for the most part, in full bloom; while the latter have scarcely a flower upon them, and seem to be devoting their energies to leaf-growth. Is this experience general?—HERBERT MILLINGTON, *King Edward's School, Bromsgrove*.

A Few Facts about Alpine Plants.—Last year I gathered seeds of *Gnaphalium Leontopodium* (the Edelweiss), and this spring they were sown in pans, well drained, and filled with peat, and kept in a cold frame. They germinated freely, therefore I had hundreds of seedlings, which I pricked out into small pans filled with peat mixed rather finely with broken pieces of sandstone. Amongst other Alpine plants recently received from the Tyrol, *Saxifraga cæsia* (the Silver Moss) is a singular object when in flower; the blossoms are white, and are borne in small panicles on thread-like stems about 3 in. high. Amongst *Primulas* the charming *P. farinosa*, with its silvery leaves and lilac-purple flowers, is at present finely in blossom. Allied to this species is *P. longiflora*, the flowers of which resemble those of *P. farinosa*, except that they are on longer stalks, and are

also generally of a deeper colour ; it is a native of the mountains of Austria and Italy. *Ranunculus alpestris*, a pretty though diminutive species, with dark glossy green leaves and white flowers, is now in bloom and very interesting. *Helianthemum alpestre*, a dwarf-growing species with beautiful yellow flowers, has a fine appearance ; it comes from the Tyrol. This year flower garden work will be far behind the usual time, as we shall have, to all appearance, to wait till the beginning of June before any warm, settled weather sets in.—LOUIS KROPATSC, *Laxenburg*.

Bedding Violas.—We are pleased to see from the remarks of your correspondents, that bedding Violas are flowering so freely in the south this season. In October last we planted out a large number, which stood the winter well, and for some time they have been blooming profusely ; without them, indeed, our borders would have been dull this spring, when all flowers are so much later than usual, and even Wallflowers and Stocks have been destroyed by frost. We send you blooms of the following varieties, in order that it may be seen what fine colours exist amongst these Violas for early spring bedding, viz., *V. Acme*, Canary, Brilliant, Grievei, formosa, rubra lilacina, stricta azurea, stricta cygnet, picturata, The Tory, multiflora, Snowdrop, Holyrood, Sovereign, Pillrig Park, and Dickson's White Bedder.—DICKSONS & CO., *Waterloo Place, Edinburgh*. [All handsome, but Holyrood especially so ; indeed, matchless as regards colour.]

BOG PLANTS.

IN the remarks on these (p. 201) it is stated that the common British Sundew (*Drosera rotundifolia*) thrives in company with the American species, which the writer states should be grown in coarse river sand. I am not familiar with the North American kinds, but I have often gathered *D. rotundifolia* in morasses in Scotland, and



Common Butterwort (*Pinguicula vulgaris*).

may mention that I never found it growing anywhere but on the surface of Sphagnum Moss, where it spreads and thrives wonderfully. In such situations the ground was always soaked with wet, but there was no standing water within 1 ft. or 2 ft. of the surface of the Sphagnum, and the Sundew roots were confined to the surface of the Moss. I used to grow the Sundew in a tub with a few other native aquatics, and I found that the surest way of getting it to establish itself was to carry away a patch of the Sphagnum with the Sundew in it, and set the whole in the tub half or three parts filled with Sphagnum and water, so that the top layer of living Sphagnum and the Sundew received their supply of moisture by capillary attraction only, which was quite sufficient. The Sundew does not thrive well in the neighbourhood of smoky chimnies. The *Parnassia palustris* I found growing and flowering vigorously in a heavy red soil, close to the side of a loch, and so wet and soft that one's feet sank over the ankles. At the same place the *Pinguicula*, of which the annexed is an illustration, grew abundantly in firm but moist, clayey ground. J. S. W.

Crown Imperials.—Several notices of these showy-looking bulbs have appeared in the columns of THE GARDEN lately, and much has been said in their praise, with all of which I can readily agree, for I have a clump of them which has remained untouched for some years, and which throws up a number of fine-flowering stems. The white *Anemone japonica* Honoreine Joubert has got entangled with them, and when they die down it takes their place ; but I wish to draw attention to their value in another point of view, viz., as cut flowers. I do not mean the whole head of bloom, but the separate bells. If one or two of these are taken off and placed amongst other flowers in the base of a March stand, I venture to say that few will look at either without admiring them, and asking what that curious-looking flower is.—DELTA.

Double Primroses (pp. 328 and 343).—A few years ago a lady living at Strabane, in the north of Ireland, sent me some plants of

the double yellow, two shades of double crimson and deep purple, and we also had then both the double white and lilac. A succession of dry, hot summers entirely destroyed the roots of these lovely spring flowers, leaving with us only the single yellow. Some three years ago we found in a wood at a village not far from Sandon, in Staffordshire, amongst the wild Primroses growing thickly and luxuriantly there, roots with double flowers, the stamens and pistil being changed into petals. Two of the flowers were gathered, and since that time some of the people living in the village have transplanted the roots into their gardens, where, I believe, they still exist and are much prized.—E. EDWARDS, *Maryfield House, Newcastle, Staffordshire*.

VEGETABLE CULTURE FOR MARKET.

ASPARAGUS.—Our chief supply of early Asparagus comes from French gardens, in which it is cultivated on a better system than that followed about London. French Asparagus, which is supplied as early as November, has, therefore, so materially altered the price and demand for English-grown Asparagus, that the Fulham growers and others are continually reducing their plantations, and some have entirely done away with Asparagus to make room for quicker-growing and more remunerative crops. The French Asparagus, which is blanched, and about 15 in. or 18 in. in length, is much stouter-stalked than that grown in England ; consequently it commands a higher price than the latter, the usual price at Christmas varying from 15s. to 35s., or even 40s. a bundle of 100 heads, according to the demand and quality of the produce ; whilst English-forced produce, which seldom appears much earlier than February in any great quantities, sells for 7s. 6d. to 10s. 6d. per bundle retail, but the grower does not get near that price, and it is, indeed, barely remunerative. Out-door Asparagus in warm early seasons is, however, a paying crop where the soil is suitable to its growth, but in late cold springs the beds do not begin to bear until May, thus materially shortening the cutting season, and likewise the profits ; for cutting must be discontinued by the middle or end of June, in order to allow time for a full growth of the shoots before the end of the autumn. This crop occupies the ground for two entire years without yielding any pecuniary return, and, in addition to the ground it thus occupies, great expense is incurred in the way of manure and labour. Although Asparagus begins to produce a little in the third year, it is not until the fourth season that it begins to fully pay for the trouble and expense of growing it. During these three years the same ground would have yielded six, nine, or twelve other crops, each of which would have probably well paid the cultivator. Asparagus, too, even in a young state, is a gross feeder, and whether in the long run it really pays well or not is rather a difficult problem to solve even by the grower.

Asparagus in London market gardens is raised from seeds saved in autumn and sown in rows, from 18 in. to 2 ft. apart, in February among lines of young fruit trees, or bushes, or Moss Roses. The less shaded the ground is the better, but open ground is seldom devoted to this crop the first year. I have, however, seen a field at Isleworth cropped with it, Potatoes, Cabbages, and Brussels Sprouts being planted between the rows. Great attention is paid to Asparagus the first season in the way of hoeing and cleaning and thinning a little if too thick. The succeeding spring, provided the plants have grown strongly, they are transplanted. Market gardeners now seldom plant beds of Asparagus, and such as may exist are giving place to the single-row system. Mr. Steel, of Fulham, had some Asparagus beds containing three rows, planted 2 ft. apart from one another, and from the centre of one bed to that of the next was 9 ft. He had also a few other beds with two rows in each, the same distance apart as in the case just named, but in this instance the beds were only 7 ft. from centre to centre. Mr. Dancer, of Fulham, and some

growers at Barnes and Mortlake still have *Asparagus* on the bed principle. These beds, in addition to the *Asparagus*, yield three rows of French Beans in early summer, two rows of Coleworts in autumn, and three rows of the same in the alleys between them. The method now generally adopted, however, is to plant *Asparagus* in single rows or lines, 6 ft. or more asunder. The ground for the crops having been trenched and heavily manured in the previous autumn, it is marked off into beds with alleys intervening 1 ft. wide. In these beds Radishes are sown in December or January, and in March or April, after the litter for the protection of the Radishes has been removed, the alleys are dug over, and in these the *Asparagus* plants are planted, about 18 in. apart. The Radish crop will soon be removed from the beds, which are then cleaned, slightly forked over, and sown with Beet or Onions, or Leeks are transplanted on them. These crops occupy the space till autumn, when they are cleared off and Coleworts or Wall-flowers planted in their place. Nothing more remains to be done, except hoeing the ground and keeping the plants clear of weeds, until autumn, when after the stalks turn yellow they are cut off. As soon as the ground between the rows after this becomes vacant, the whole receives a heavy coat of rich light manure, and soil to a thickness of 5 in. or 6 in. is drawn over the *Asparagus* roots in the form of ridges. The spaces between are then dug over and again cropped with Radishes, Lettuce, or similar crops. The next year, which is the third from the time of sowing and one from the time of planting, a partial crop is obtained. Only a part of the heads that show themselves are cut, and these only where they are the thickest. This is continued for about three or four weeks, when all the shoots are allowed to grow. After the tops have been cut off in the following autumn, more soil and manure are drawn to the ridges, which by that time have the appearance of Celery rows, minus the plants, with a wide alley between them. The next season a good crop is expected. All shoots, small or great, are cut as fast as they appear, until the end of June, when all are allowed to grow at will, excepting small sprayey shoots that are better removed than left. In the alleys are now planted two or three rows of Coleworts, and in many cases, too, the ends and sides of the ridges are similarly planted; but if Beet had been sown there, it will remain until the autumn. When cutting-down time comes, all the unberried "Grass" is cut and laid in heaps together, whilst the berried stalks are kept separate. The former is carted to the fireheap, or is put under hotbeds when they are made, and the latter are kept for seed in a dry and airy shed. After being stored there for a while, until the seeds become ripe and firm, the berries are separated, washed and dried, bruised, and rubbed in sand, afterwards washed again to clean the seeds, which are spread out to dry, and then stored until sowing time. Before the time for thus clearing the ridges most, if not all, the Coleworts will have been marketed; therefore the surface-soil of the ridges is drawn into the alleys, and into these it is dug rather deeply. Immediately some of Cock's hardy green Coleworts are planted, which are marketable by the end of February, after which the routine of ridge-making is proceeded with. Plantations last in good bearing condition for six or seven years, after which time blanks occur, when it is considered more profitable to break them up than to keep them longer. When such is the case they are cut from during the last year of their existence as long as the result will pay for the trouble, and if it is thought that the roots will afterwards be of any use for forcing, they are permitted to occupy the land till November, when they are lifted for that purpose, but if too poor for that purpose they are uprooted at once; the ground is levelled, manured and dug, and planted with Broccoli and Cabbage. The ordinary long saw knife is the

instrument used in cutting, and the men and women employed in market gardens are adepts as regards its use. They slip down the blade alongside of the shoot, and, with a peculiar twitch, sever the stalk from the crown without injuring it, or the advancing shoots in the least. The heads when cut are laid in heaps on the ridges, afterwards to be packed in long Grass from the field, collected into baskets, and conveyed in a cart or barrow to the sheds, where they are washed, tied into bundles of 100 (105), and are that night, or early the next morning, sent in large square hamper to market.

Previous to this, however, I should have stated that the heads are sorted into three sizes, the best being sold at the best prices, the second cheaper, and the third, for soup or flavoured, at a nominal rate. The yield of *Asparagus* per acre depends much upon the season, soil, and situation, and also the mode of culture. In some of the French *Asparagus*-growing fields from 300 lb.—or, in unfavourable years, still less—up to 1200 lb. per acre are obtained. According to quality, the produce is divided into first, second, and soup *Asparagus*, the first being worth, on an average, 1s. to 1s. 2d., the second 6d. to 8d., and the third 3d. to 4d. per lb. In some cases, even in poor seasons, 40,000 lb. of prime quality, the produce of 125 acres, have been sold at 1s. per lb. It thus realised, without taking second rate and soup *Asparagus* into account, over £16 per acre. Although the first outlay in raising *Asparagus* is somewhat considerable, the cost of cultivation, &c., per acre, if the average of several years be taken, does not, it is estimated, exceed £25; and as the gross return amounts to between £35 and £50, in exceptionally favourable years reaching even to £120, the margin for profit is ample. English growers should, however, one would think, by intercropping, realise more profits than French cultivators, who allow their plants much more space, both between and in the rows. Nearly every market gardener has some particular kind of *Asparagus* which he grows and likes best, but the one most grown is a variety cultivated by Mr. Dancer, of Chiswick. Mr. Harwood, of Colchester, a grower for Covent Garden Market, sows spring Onions all over his *Asparagus* ground the first year after planting, care being taken to remove all that come up too near the crowns of the *Asparagus* plant. As soon as the Onions are gathered, a dressing of lime dust, soot, salt, or other manure, is applied to the beds, and covered over with a few inches of soil from the alleys. Manure is always preferred to other dressings, as it enables the shoots to push easily through it the following season. The second year a row of Cucumbers is grown in each alley, which is previously well manured and dug. In March of the third year the beds are faced up, the quantity of soil being put on thick enough to allow of the stalks to be cut 7 in. long. Mr. Harwood, who has taken many prizes for *Asparagus*, cuts such stalks 10 in. long, and the following is the weight of some of the prize bundles, consisting of fifty heads each, in respective years: In 1872, one bundle weighed 7 lb.; in 1873, 7½ lb.; in 1874, 8 lb. 14 oz.; in 1875, 8 lb. 2 oz.; and in 1876, 100 heads weighed 15½ lb.

PEAS.—Of all vegetables brought to Covent Garden Market none, perhaps, are more esteemed than early Peas, and to the grower they are, in good seasons, a remunerative crop. Nearly all market gardeners near London grow them largely; and although French Peas are sent to market early in May, and sold at cheaper rates than English growers could afford to produce them, preference is always given to home-grown Peas, for which there is always a good demand until about September. After that time the ground is occupied by crops likely to pay better than late Peas. Until the end of October, however, fine examples of the Ne Plus Ultra type may be obtained ready shelled in the market, the produce in many instances of

the Surrey fields, Bedfordshire, Essex, and adjoining counties, from whence come the greater bulk of both early and mid-season Peas to Covent Garden. In making early sowings it is a practice with market gardeners to choose a fine day to break down the ridges (the ground being previously manured and cast into ridges), measure off the lines and draw drills in the forenoon, and to leave them open till the afternoon, so that the soil in them may dry a little, and become thereby warmer; then to sow the seeds and cover all up before the evening. The drills vary from 2 ft. to 3½ ft. apart, according to the vigour of the sorts which are to be sown. In the close lines, Lettuces or Spinach are used as inter-crops, but in the more distant ones Cauliflower is the crop usually planted. In many instances the first sowing of Peas is made in December on a warm border; but, considering that they must be sown a little deeper than in January, and the risks to which the seeds are liable from mice, birds, insects, and damp, it is a much-disputed point among good growers whether the December sowing has any advantage over that made in January, many contending that the produce of the latter is quite as early as that of the former, and the crop less subject to risks. Different growers have a preference for different kinds; but the early dwarf kinds are universally the most desired, on account of their quick returns, the small space they occupy, and because they require no stakes. Beck's Little Gem is much liked for an early crop, on account of its dwarf habit and good qualities. Other sorts highly esteemed by market gardeners are Early Frame, Croom's Dwarf, and Bishop's Dwarf. As a rule, they are sown for a first crop in January, and invariably on a dryish soil, and in as sheltered a place as possible, other sowings being made fortnightly in succession till April, or even till the 1st of July. William the First is a fine early Pea for market purposes. It is of about the same height and habit as Sangster's No. 1, and equal to it in earliness; but the pods are larger, fuller, and greener. Multum in Parvo is also largely grown in many places as a market Pea with the best results, coming in, as it does, quite as early as Sangster's No. 1, but having larger pods, while the Peas are as delicious as Veitch's Perfection. It grows to a height of from 16 in. to 18 in., can be sown in rows 20 in. apart, wants no laying, and if cut by frost, as the early Peas often are, it will send up a profuse second growth that will bear a heavy crop. Laxton's Omega, on account of the deep green colour of its pods and Peas, is also a good market Pea. It is a dwarf Ne Plus Ultra, but harder and as good a cropper; the pods fill well, the Peas being still soft and juicy when the shells are full to bursting; it is a fine dwarf late variety.

Sticking Peas is seldom resorted to in market gardens, the haulm being allowed to lie on the ground. Gathering is a matter well attended to, as the oftener the pods are picked when full the longer do the plants continue to bear. Most market gardeners save their own seed, and, indeed, some grow Peas for seed only; in this case the haulm is frequently shifted from one side of the row to the other, in order to prevent the pods from rotting, from being destroyed by snails, and to expose them to the air and sun, and thus cause them all to ripen alike. When ripe the haulm is pulled up and dried, and taken indoors to be cleared of its seed during wet weather. When the Green Peas arrive in the market, which they do in half-bushel baskets, covered with Rhubarb leaves fixed on the surface by means of Willows, and are disposed of to various salesmen, women shell them in large quantities. All the Peas then, little and big, are sifted, the largest being kept separate, and all spotted or worm-eaten ones are picked from them; they are kept in basins by themselves, and sold at a higher rate than the others, which are in their turn re-sifted and picked, until three kinds and three

prices of Peas are made. I have known some market gardeners in the height of the season pay nearly £100 per week for gathering Peas.

BROAD BEANS.—These are not grown to any great extent in London market gardens, and although good supplies of them are brought to Covent Garden Market, they are the produce of large fields in what are termed the home counties. A few London market growers produce them for the sake of convenience of cropping, &c., but they are not considered remunerative when the cost of the labour incurred in cultivation, seed, picking, packing, and carting is considered. Where they are grown, however, dry and light soils in warm positions are chosen for early sowings, which consist of the Early Mazagan. Sowings of this kind are made in January, and again in February, in rows 2½ ft. apart, running across or obliquely in the borders or quarters. Large sowings of the Longpod are made in the latter half of February and in March, in rows equally distant, as for Mazagans, but with less particularity as regards the way in which they run, the position of the quarter, or the quality of the soil which they occupy. The Broad Windsor, which forms the principal crop, is generally sown in March. The Green Broad Windsor is preferred by consumers; therefore market gardeners generally grow this sort for the main crop. Beans are sometimes sown on ground occupied by Radishes, with the progress of which they interfere but little, as the Radishes are too small to injure the Beans, and they are sure to be removed before the Beans can be in any way injurious to them. Early Stone Turnips are not unfrequently sown between the rows of Beans, and such spaces are also sometimes occupied with Cos Lettuces, Cabbages, Cauliflowers, and Brussels Sprouts in every second row, Lettuce being in the intervening one. The Lettuces, being soon ready for market, are removed, and thus make a good clearance for a free circulation of air, and a passage from which the Beans off two rows can be easily gathered. Market gardeners, as a rule, do not save their own seeds of Beans, as they find it cheaper to buy them. When seeds are to be saved, the haulm must be allowed to occupy the ground a few weeks longer than it otherwise would do, and thus the chance of cropping it with Savoys, late Sprouts, or Cauliflowers, Endive, and a few other similar crops is lost. As soon, therefore, as the Beans have entirely yielded their crop the haulm is pulled up and carted to the manure heap. Some growers, however, grow Beans for seeding purposes, and in this case about one-half or two-thirds of the pods, consisting of the earliest-formed, are picked off for marketing in a green or usable condition, the remainder being left to ripen. If all were left the seeds would not be so large, plump, or heavy as when the pods are thus thinned out. When the Beans have become well matured, the haulm is pulled up and laid on its side to dry for the remainder of the day, if fine; it is then tied into bundles, dried thoroughly, brought home, and either thrashed at once, or kept under cover or in a thatched stack until a more convenient season for thrashing out the seed occurs. The ground cleared is then dug or ploughed or deeply worked without being manured, and a crop of Endive or white Cos Lettuce is planted thereon for use in October, or Savoys, Brussels Sprouts, Cauliflower, Broccoli, autumn Radishes, Leeks. The season when Broad Beans are in the market is comparatively but a short one, and although they usually find a ready sale, the London public do not appreciate them in the same way as they do Peas, French Beans, or Scarlet Runners.

C. W. S.

Spring-flowering Bulbs in Regent's Park.—Notwithstanding the unfavourable weather which we have had, that portion of the park known as the Floral Walk is now rendered gay

by means of a numerous and brilliant display of Tulips and other spring bulbs. By a judicious blending of the various colours the gaudy hues of some of the kinds are effectively toned down by the delicate tints of others—treatment the result of which is highly satisfactory.

THE KITCHEN GARDEN.

NEW POTATOES.

DURING the summer months there is nothing in the vegetable way more esteemed than new Potatoes, but although this is the case, the practice of most growers is to plant all their stock at once; by doing which, the skins of the young tubers are set before the end of July, and therefore cannot be got off without peeling. This not only detracts greatly from their appearance, but the Potatoes are never so good in quality, as there is something in the inner skin that appears to preserve the delicate flavour in cooking. It is a well-known fact that even old tubers which are fully ripe are always better when steamed or boiled unpeeled, and young ones that can be presented at table without losing any of their starchy matter, and so finished off as to be just cracking, are as near perfection as possible. To eat when young, the Kidney sorts are the most esteemed, the best of which are the Ashleaf kinds, such as Veitch's and Myatt's, and to have these in succession, it is necessary to make two or three plantings in some open, sunny spot, where they can be afforded light, rich soil, and have plenty of space for the air to circulate well between the rows, which will be the means of rendering the foliage thick and firm, and enable it to resist the attacks of disease, so prevalent when the haulm is in any way drawn. To keep the shoots of the seed-tubers back, they should be spread out singly on light shelves in a shed or cellar, where they can be kept cool by allowing a draught to pass through, and if this is done the growth will be very slow and sturdy, and the sets but little shrunken or wasted, even at the end of several weeks hence. I have had them as late as the latter part of July, at which time when planted they are quickly through the ground and ready for earthing up, and if favoured with a soaking rain just before that operation takes place, the young tubers swell rapidly and are soon fit for use. Managed in the way above-mentioned, two crops may be got off the land the same season, and the spaces set at liberty by the middle of October for planting Cabbage, or anything of that kind to stand the winter. It should be borne in mind that Potatoes saved for late planting should not have their shoots rubbed off, that is, if they are of the Ashleaf Kidney kind, as when divested of their first growth they rarely start again, except to form small tubers around them. The general tendency of Potatoes to supertuberate has been taken advantage of to get young ones in winter, but to do this, the round strong-growing sorts are the best, and the larger the sets of these are, the greater and more satisfactory is the yield they produce. This is owing to the larger amount of stored-up matter they contain, which enables them to pass the summer without shrivelling up in the way those of smaller size would be likely to do; to prevent which, they should be stored in the coolest place that can be found, and have all their shoots rubbed out as they show. To start them in the autumn or winter, all that is necessary is to bury them in boxes of moderately dry earth in layers, and stand them in any situation where they can feel a little warmth, when in the course of a month or six weeks they will be studded all over with clusters of young ones. These, although not so good as those obtained under more natural conditions, are a novelty at that time of year, and are much esteemed by some, and old spare tubers that remain over at the end of the season may be utilised by turning them to this account, as it is better than throwing them away. S. D.

CUCUMBER DISEASE.

I HAVE had considerable experience in the culture of Cucumbers and Melons, and although I have read from time to time accounts of the Cucumber disease in *THE GARDEN*, I never had it amongst my plants until now. I find too, that the Cucumber disease described in *THE GARDEN*, Vol. XIII., is quite different from that in my case. The alarming rapidity with which this disease has traversed the whole range of my pits is astonishing. I first discovered it in an end light on the 9th of May, and now (May 14) it is in thirteen lights, planted with Cucumbers and Melons in the usual way. The soil is composed of turfy loam, leaf-mould, and manure. I cannot form any idea as to what has caused this disease to break out, unless it be minute fungi in the manure and leaves, which form the heating material for these pits. What had I best do to prevent its getting into my Cucumber house which is a short distance off? Shall I destroy all these plants of which I send you samples for examination, or is there any way by means of which I may save the best of them?

A Cucumber grower, four miles from here, has lost all his winter crop through this same disease. J. M.
Gloucestershire.

[The samples which accompanied this communication exhibited one of the most virulent cases of Cucumber disease which we have yet seen. We wish a few fruit had accompanied the leaves, as the disease mostly shows itself in a somewhat different character in the fruits. But more than enough of leaves and stems have been forwarded to prove the case to be one of the worst possible of the Cucumber disease. There are many types and grades of it; some comparatively mild, others running rapidly into wretched masses of rottenness. There is nothing unusual in its spreading so fast; it generally does so; and the strong probability, almost amounting to certainty, is that before it has quite wrecked the plants in the pits it will have attacked the house. It is impossible to account for the sudden appearance of this disease. Soil, skill, treatment, site, continue just the same as usual, and yet, alas! the plants are suddenly crippled or destroyed. It is, moreover, highly infectious, and is often carried from place to place. A neighbourly visit from an infected garden may even bring it. It came here on a plant of Tender and True, and almost vanished us for two years. Salus decidedly checked it, whether by destroying the disease, or stimulating the plants so much as to help them to make a rush through it, continues doubtful; most probably the latter; and hence, partly at least, originated a change of practice, which has enabled us to master, rather than wholly stamp out, the disease. We observed that the young plants grown in a brisk heat had no disease; it was therefore determined to continue a warmer course of treatment all through. A rise of temperature from 65° to 80°, or 85°, at top and bottom, has suppressed, if not extinguished, the disease. It is, we believe, still here, but it does not show itself. We had proofs of this in the autumn. A cold pit was planted with French Cantaloupe Melons; these got diseased, while those subjected to more heat were free from it. Acting on this fact, our Cucumbers and Melons have now, as has been before stated, more heat than usual, and up till now we have seen no disease. Our advice is destroy the worst plants or the whole in the pits. Thoroughly clean, then add new and more heating material, and make a fresh start. The surest way of sweeping the disease out of the house is to advance the temperature to 80°, or even 90°. With abundance of light and proper care in regard to air, &c., this high temperature is by no means unfavourable to Cucumbers or Melons, while it has proved with us the only sure or certain antidote to the disease.—D. T. FISH.]

GARDEN DESTROYERS.

WIREWORMS.

(*ATHOUS HÆMORRHOIDALIS* AND *AGRIOTES LINEATUS*.)

THE grubs of these beetles, as well as those of some nearly allied species, are only too well known to gardeners and farmers by the name of wireworms, and it is perhaps hardly overstating the case to say that they are among the most troublesome foes with which either has to contend, as at times they are in great abundance, and live on and destroy the roots of most garden and farm crops. The grubs of the Tipulidæ (Daddy Longlegs), described in *THE GARDEN* for August 10, 1878, are sometimes called wireworms, but that is quite a mistake; the term should only be applied to the grubs of the beetles belonging to the family (the Elateridæ) to which the insects belong, which form the subject of this paper. Wireworms are generally most abundant in newly-made gardens, particularly if the ground has been previously pasture land. When they are present in great numbers they can only be got rid of by much trouble and labour. There have been many means suggested for keeping this insect in check, but few are of much use unless the ground be well cultivated, and care taken to destroy every one which may be found. No portion of a garden should be allowed to remain undisturbed and covered with weeds for any length of time, for such places form regular hot-beds for the propagation of these and many other insects. Most birds, particularly rooks, starlings, blackbirds, thrushes, pheasants, and partridges, are very fond of wireworms, and if the ground be kept properly worked, so that they can get at them, they destroy immense numbers. Mole also are their deadly foes, and certain carnivorous beetles belonging to the family Carabidæ kill quantities of them. Slices of Potatoes or, in default of these, slices of Beet-root, Turnip, Carrot, &c., or pieces of Lettuce or Rape-cake have been found very useful as baits when buried about 1 in. below the surface near any plants which have been, or are likely to be, attacked by these grubs. Each bait should have a small stick stuck into it, so that it can be removed and examined; this should be done every morning, and the wireworms which will be found boring into the bait destroyed.

Some recommend merely laying these baits on the ground, as being more efficacious than burying them, a plan which is certainly simpler, and might be tried as well as the other. Some plant Daisies, the roots of which the wireworms are particularly fond of, to attract them from any plants they wish to preserve. Gas-line, and a mixture of lime and fresh soot, well incorporated with the soil, are very effectual in keeping them in check. Common salt strewn over the ground and well dug in (about 6 cwt. to the acre), is also much recommended. Rolling the ground is of little or no use, as the wireworm is so tough, and generally so far below the surface, as to be unhurt by any ordinary rolling, and the ground is made harder, and consequently birds have more difficulty in getting at them. Fortunately, the wireworms are not free from parasites; a very small ichneumon fly finds them out and deposits its eggs within their bodies. They are also infested by a minute intestinal worm. Both these parasites no doubt assist in checking their increase. The beetles should always be destroyed whenever they can be found. They are at times attacked by two species of minute ticks, but it is very questionable if their numbers are reduced by these parasites.

A very successful cultivator of Picotees and Carnations tells me that he always had the earth in which he grew his plants carefully looked over twice on the potting bench to be quite sure there were no wireworms amongst it; and even then he placed a piece of Carrot in

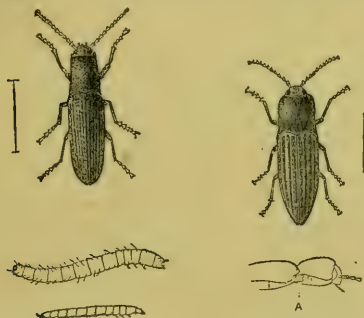
beetles are quite harmless, and may generally be found on flowers, particularly umbelliferous ones, stems of Grass, under stones, &c., during the spring and summer. The females are provided with longish ovipositors, which they can protrude or retract at pleasure; with these they deposit their eggs, which are very small, oval, and whitish, during the summer below the surface of the ground, near or on the roots of some plant. The number of species of which the wireworms are destructive is not exactly known. A very large majority live in decaying and decayed wood, but probably ten or twelve, or perhaps more, are injurious to garden and farm crops. The grubs of the following species, however, are very destructive and very common, particularly those of the first two, *Athous hæmorrhoidalis*, *Agriotes lineatus*, *A. sputator*, *A. obscurus*. The wireworms are all long, narrow, smooth grubs, of a yellowish colour, and are very tough and horny, resembling very much the common meal worm in general appearance, and they are tolerably active. They are very long lived and grow very slowly, for they do not attain their full size for five years; at the end of that time those of the largest species are about $\frac{3}{4}$ in. or rather more in length. When full grown they descend deeper into the earth, and form small, oval cells in which they undergo their change to the chrysalis state.

Athous hæmorrhoidalis is about $\frac{1}{2}$ in. long; the head is black, with shining eyes of the same colour, and is furnished with a pair of dark reddish-brown antennæ, consisting of twelve joints. The thorax is bluish-black in colour, and covered with very minute pale hairs, which are scarcely visible to the naked eye; it is long and narrow, with the sides nearly parallel, and terminating in a spine at each angle of the base; the wing cases are rather wider than the thorax, and are long and narrow; they are not quite as long again as the head and thorax together, the sides are nearly parallel, but gradually converge to a point; they are of a dark reddish-brown colour, covered with fine pale hairs; they are striated with several finely punctured longitudinal lines; the legs are short with long feet, and of a chestnut-brown colour.

Agriotes lineatus is about $\frac{3}{4}$ in. long, and is considerably stouter in proportion than the foregoing species; the head is small and blackish; the antennæ are reddish-brown, and consist of twelve joints; the thorax is dark brownish-black, shaded at the edges into chestnut; it is nearly as wide as it is long, and very convex; both sides terminate at the base in a spine; the wing cases are long, oval, and convex, with somewhat parallel sides; they are striated longitudinally with several punctured lines, the spaces between the lines being alternately brownish-black and chestnut; the entire insect is covered with minute pale hairs.

The wireworms of different species are very similar in appearance, but they can be distinguished by the last joint of the body, which varies in form; the distinctions are, however, not worth mentioning here. They are all long, narrow grubs, horny and very convex above. Their bodies are composed of twelve smooth, yellowish joints; the three first each bear a pair of short legs; the last is furnished below with a retractile tubercle, which serves the purpose of a seventh leg; this last joint is generally roundish and flat at the top, and usually more or less toothed at the edge, but varying in this respect according to the species. The first joint of the body is much larger than the three following ones. The head is somewhat darker than the rest of the grub; its mouth is furnished with minute feelers and a pair of strong, toothed, reddish-brown jaws; there are a few scattered hairs on the body. The chrysalis is nearly as long as the perfect insect, and of the same form, all the limbs of which are distinctly visible through the semi-transparent skin in which they are wrapped.

G. S. S.



1.—*Athous hæmorrhoidalis* (magnified).
2.—Wireworm (magnified and natural size).
3.—*Agriotes lineatus* (magnified).
A.—Side view of thorax of ditto.

each pot, which was examined every morning, and the plants were not considered safe until the Carrot had not been touched by wireworms for a few days. In 1874, a piece of land near Worthing, which had not been cultivated for two or three years, during which time it had been lying waste, was made into a flower garden; during the first year nearly all kinds of herbaceous plants suffered much from the attacks of the wireworm, particularly Carnations, Pansies, Daisies, Polyanthuses, and Sweet Williams. Whenever a plant was found to be drooping, it was lifted, and a careful search made for the worms, when sometimes five or six would be found on one plant. The second year the damage, though considerable, was much less, the same plan being pursued. The third year the number of wireworms was so much diminished, that no particular care was taken to exterminate them, but every one met with was destroyed, as well as any of the beetles. The garden is now nearly free from them.

Wireworms appear to be almost omnivorous, as far as the produce of kitchen gardens is concerned, and the flower garden fares little better. Such plants as Irises, Ranunculuses, Anemones, Lobelias, Dahlias, Stocks, and the plants already mentioned, are amongst those particularly liable to be attacked. Young trees in nursery gardens often suffer much from these insects. The Elateridæ are a tolerably large family, containing nearly sixty British species. The beetles are all long, narrow, and oval, with very long thoraxes; they are usually of a dull brown or yellow colour, but some are more gaily coloured; they are mostly very active and fly well; if disturbed they generally fold up their legs and antennæ and feign death, and if on a flower fall to the ground. Their legs are so short, that if one chances to fall on its back it could not right itself, were it not for the following peculiarities in its structure: The thorax is furnished beneath with a small spine (fig. 3A), and which fits into a cavity in the breast when the insect lowers its head and thorax. If the beetle falls, or is laid on its back, it raises its head and thorax, which forces the spine into the cavity; then forcibly trying to straighten itself again, the spine flies out with an audible click, and the insect is raised several inches into the air and generally falls on its feet; if it does not, it makes another jump. The

THE INDOOR GARDEN.

CAMELLIAS AND THEIR VARIOUS MODES OF CULTURE.

Pot Culture.—Where small plants only are wanted, or specimens to shift from one house or room to another, healthy plants in pots will always be found most useful. Such plants should always be in the hands of the cultivator when from 15 in. to 18 in. high, and about half these measurements in width. Abundance of little plants of this description can always be purchased, and they are better to begin with than larger ones. They will probably be in 3-in. pots, and when it is found that these are becoming pretty well filled with roots they must be shifted into 6-in. ones. What to pot them in, and when to pot, are not very important questions, as I find that our plants succeed well, potted or planted, at any time, and in any kind of soil; and at the same time it is best to be on the safe side, and for that reason it will be well, especially in the case of young growers, to be careful at first as to the selection of their soil until it has been proved that the roots will not refuse material of a

commoner kind. A mixture of loam and peat, in about equal parts, with a liberal addition of silver sand, makes one of the best composts which can be used for Camellias. Before potting them into larger pots the latter must be perfectly clean and dry; good drainage must also be secured, and it is a good plan to place a thin layer of Moss over this before putting in the soil. In beginning to pot, a few of the roughest pieces of the material should be placed at the bottom, and the ball kept entire should be set on this. The soil should then be put carefully round the sides, ramming it down firmly, and leaving the surface of the old ball just covered and no more. After potting, if the plants are about to start into growth, they should be placed in a moist, partially-shaded house in a temperature of 55° or 60°. They should remain no longer there than the roots get hold of the new soil, as, after that, full exposure to the sun and less moisture in the atmosphere suit them best. When Camellias are potted, after the flower-buds are formed, but not opened, they should not be excited into growth in any way, but be allowed to quietly establish themselves in the new soil. For my part I would just as soon pot Camellias when the buds are half swelled as immediately after the blooms have fallen. Plants of tolerably good size may be grown in 6-in. pots, and when too large for these a 10-in. pot will generally be found to be a suitable shift. From this they may be shifted into 14-in. pots, each time using the same compost as that recommended in the first instance. The general culture of Camellias in pots consists in keeping them always potted in good sweet material, keeping the roots constantly moist, as nothing injures the Camellia so much as drought at the root. During the time when the most tender part of their growth is being made they may be kept in a somewhat close, moist, warm atmosphere, but whenever growth seems at an end let them be fully exposed to sun and air. Except when newly potted, they should never be shaded; indeed, if they can be accommodated with an unshaded house during the summer and autumn, so much the better, but after growth is completed—say from the middle of June until the end of September—they do well placed out-of-doors in a situation sheltered from wind, but fully exposed to the sun. The bloom-buds often drop to a greater extent under pot culture than under any other mode of treatment, and in nine cases out of every ten bud-shedding is either the result of bad drainage or of drought some time or other. The foliage must at all times be kept quite clean, either by means of sponging or syringing. Nothing sets off Camellia blooms to greater advantage than fine, healthy, clean foliage.

Box or Tub Culture.—When Camellias become too large for ordinary-sized pots, rather than allow them to become deteriorated from want of proper root-room, let them be planted in large round tubs or square boxes. This mode of growing them may be called pot culture extended, as in planting and general requirements the one requires the same attention as the other, but when once established in a large tub or box they do not require to be often shifted, twelve years being not an unusual period for plants to remain in the same box. Our largest specimens stand out-of-doors from the middle of May until the middle of October. They are wintered in a large cool house, and they bloom superbly during March, April, and May. When established, watering copiously at the root constitutes the chief attention which they require. For convenience of shifting about and general decoration, small-sized pots will, however, be found of greater service than either tubs or boxes.

Planted Out Under Glass.—Of the various ways of growing the Camellia indoors this is by far the best; thus treated, they grow better, bloom more profusely, and the blossoms open in succession for a greater length of time. Several bushes in the conservatory here bloom from before Christmas until after Easter, and we can never insure anything like this in the case of pot or box plants. From one plant alone of the double white we cut, during December, January, February, and March, over 1000 blooms; and yet it is not a very large plant, being only some 10 ft. high and about 4 ft. through. Beds for Camellias may be of any size, from 3 ft. square and 2 ft. deep to those of larger dimensions. Here, as in potting, perfect drainage must be secured before planting is attempted. The soil should be much the same as recommended for pots, only rougher, and a dash of charcoal in it will be an advantage. Both before and after planting the soil should be firmly trodden with the feet. The planting may be done at any time, except when the blooms are open. To plant them would probably cause them to fall prematurely. Last February we planted about a dozen Camellias, all set with buds. After planting, they were liberally watered at the root and syringed overhead; since then they have all produced some very fine blooms, and they are now making vigorous growth. Either young or old plants may be planted out, but when they become too large for pots and boxes, invariably the best plan is to plant them out, spreading out the roots a little if they have previously been twisted round the pot, but a thorough breaking up of the ball should not be attempted, unless the soil about the roots be in a very bad con-

dition. After they begin to grow they must be copiously watered and, with plenty of moisture at the root, syringing overhead is not so much needed, except for the purpose of keeping the leaves clean. If the weather happens to be very sunny when planting, and especially if they have started into growth a little, a slight shade should be afforded them for some ten or twelve days, but after that they should be fully exposed; that ripens the wood, matures the buds, and ensures a profusion of blossoms. Camellias may be planted out against conservatory walls, to which they should be trained. When Camellias become too large for the purposes for which they are wanted, they should be cut in just before growth commences, and any having long bare stems may be cut back with every certainty that they will push shoots further back from the old wood, provided they are treated the same as plants just starting into growth. Early blooms may easily be secured by starting the plants early into growth, and having the buds ripened well early in autumn. Camellia blooms in November, December, January, and February, I need scarcely say, are much more valuable than they would be about this time of the year. When kept clean and healthy, few or no insects harm Camellias.

Open-air Culture.—Camellias are now conclusively proved to be hardy, a fact, however, by no means new; but they are not grown out-of-doors so plentifully as they should be now, yet in so many parts of the country June is the best month in which to plant them out, and where they have been wintered in a close house they should be, as it were, hardened off before they are finally planted out. The best situation for them is one well exposed to the sun, but sheltered from strong winds, which prove more disastrous to the flowers than anything else. No greater mistake could be made in the case of outdoor Camellias than planting them in a shaded "nook." In such a position they might be well protected, but that would prove anything but a benefit to them in the end, as full exposure in summer promotes free flowering, and renders them proof against frost. When the pit is made for their roots two or three barrowloads should be taken out, and the same kind of material as that recommended for indoor plants should be substituted. In planting, this must be well and carefully pressed against the roots, and after that is completed, if they are planted on lawns, the turf should be laid neatly down again around their stems. Immediately the planting is done a good watering should be given, and this should be repeated once or twice a week while the weather remains dry. In excessively hot and dry weather a mulching of rough manure is of much service over the roots for the first few months, and until such time as the roots have taken a firm hold, one or two stakes, sufficient in strength to hold the plant steady, should be put to each. When planted, during the first winter, if they have not become quite established, and the weather should prove severe, it is a good plan to protect them a little with old mats, or in some way or other, but these should be put off or kept on according to the state of the weather.

The following is our selection for both indoor and outdoor culture, viz.: Double white, *Angustina superba*, Beali, *Chandleri elegans*, *Lavinia Maggi*, Countess of Derby, Countess of Ellesmere, Countess of Orkney, Cup of Beauty, *fimbriata*, Jenny Lind, Jubilee, Lady Hume's Blush, *Mathotiana alba*, Mrs. Abbey Wilder, Queen of Beauties, Rubens, and Wilderi.

CAMERIAN.

HARDINESS OF CAMELIAS.

The ability of Camellias to live out-of-doors unprotected in England appears to be something new to several who have written of late respecting them; but their hardiness has been long known in some districts not nearly so favourably situated as the places instanced. I could have pointed to examples of the old Double White and others 200 miles north of London a score of years ago that had then for a similar length of time stood out in a shrubby border uninjured. There can be no objection to any one who happens to have spare plants or feels disposed to so turn them out doing so; but except in the most favoured spots on the coast the result with these, or any other plant that naturally blooms so early, can never be satisfactory, and even such exceptional places only very partially so. The time when Camellia flowers are most required is from October to April, a season long enough to satisfy most people, although it can be extended much longer than that where desired; and the disposition to thus bloom through the winter months is one of the greatest merits of this most beautiful and useful of flowering shrubs. "A. D." speaks of the thousands of Camellias that are starved and killed in pots and tubs, a statement which is quite correct; but this is not the fault of the plant, or any evidence of its unsuitability for that description of culture; so treated, as well as planted out, and in both cases grown under glass in its legitimate position in this country; its flowers are too susceptible of injury from spring frosts and of being chafed by the wind to admit of more than very partial success out-of-doors.

although the plant itself is quite as hardy as many that are all that could be desired in the open air without any protection whatever. It is desirable to grow all the plants possible out-of-doors that will endure our climate, and that bloom at a time of the year when their beauty can be fully developed and enjoyed; but when their nature is such as not to admit of this, except as curiosities, and for those who have no convenience for treating them in accordance with what they require, Camellias, or anything else of a similar character, merely occupy a place that could be much better filled by other shrubs.

T. BAINES.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Sarracenias at Chelsea.—At Mr. Bull's nursery there is now an extensive and interesting collection of these singular plants; they fill the whole of one side of a span-roofed house some 60 ft. long. Most of them were imported last summer, and since then have made growth more like that which they usually produce in two or more years than the result of a single season. The plants are almost touching the roof glass, and up to the middle of May have never been shaded in the least, nor, we understand, will be, unless the sun is found later on to burn them; this treatment very much intensifies their colour. They comprise *S. Drummondii* rubra and *S. flava* major—the true very large-growing variety with its great veined lid. This is very scarce, and much the largest and finest species yet known. In the same collection were also other forms of *S. flava*, the singular small-growing *S. psittacina*; *S. variolaris*, very strong; *S. purpurea*; the hitherto scarce *S. rubra*, with its violet-scented flowers, that, independent of their quaint singularity of form and rich maroon-coloured petals, are deserving of cultivation for their perfume, as a single bloom will scent a whole house. Amongst these is a very distinct new kind, in form in the way of *S. rubra*, but evidently a large and free flowerer, with stouter pitchers than those of that kind. Some of the first formed since it was received have attained a height of from 20 in. to 24 in., and stout in proportion, but its most distinctive character is exhibited in the lid, the inner side of which, over some three-fourths of its velvety surface is dark chocolate, the colour quite solid and distinctly defined from the lower central portion of the lid, which is netted over with the same colour on an olive-green ground. It is a very distinct and welcome addition to this not over-numerous section of Pitcher plants, which are gradually making their way in the estimation of plant growers, since their cultural requirements have become better understood; and it has been found that they thrive and attain a condition of high colour in their pitchers, which so much enhances their appearance in a much lower temperature than that to which they used to be subjected, and which was alike destructive of both healthy vigour and appearance. With them were associated a beautiful lot of *Droseras*, distinct species, in excellent condition, and a quantity of thriving *Dionæas*; also the New Holland Pitcher plant, *Cephalotus follicularis*.—P. G.

Large *Dionæa muscipula*.—I think that with a little care in selection we might soon have a much larger variety of this highly interesting plant than that which one generally sees in cultivation. I have at the present time two fine seedlings growing at the cool end of our intermediate house here, along with cool *Odontoglossums*, &c., which present very striking differences, both in general habit and in the colour of the leaves. One is the common variety, with green leaves produced in abundance, and it measures about 6 in. across, and the other has petioles about 4 in. in length, of a purplish-red colour, and leaf-lobes quite 1 in. long, exclusive of the bristles or teeth, which measure $\frac{1}{2}$ in. in length. When laid down in the natural way the leaves extend considerably over the rim of a 9-in. pot, and have to be tied up in order to get the bell-glass on the pot. Both plants are growing together under exactly similar conditions in 2-in. pots, plunged in Sphagnum within another pot of size sufficient to hold a bell-glass, and they are kept constantly wet, air being admitted at both top and bottom of the glass. A greenhouse or cold frame is said to be warm enough to grow the *Dionæa* successfully, and this may be so during the summer, but I find that during the greater part of the growing season such quarters are too cool for it, as the leaves lose their vitality to a great extent. I put one plant at the warm end of a greenhouse for a fortnight, and in a short time the leaves refused to close on any object that was placed within them, but when restored to its old and warmer quarters it recovered its sensitiveness in a short time.—J. S. W.

Gloxinias all the Year Round.—Few plants are more useful or more accommodating than *Gloxinias*. They may be grown by anyone who has a pit heated by fermenting material or otherwise, and a greenhouse to put them in when coming into bloom, which should be some time between June and September. For the last

fourteen months we have never been without some plants of them in bloom, the number ranging from six to thirty at a time. We find them most useful, especially when grown in 5-in. pots, the size in which we mostly grow them. I find them useful for mixing with Ferns and fine-foliaged plants for house decoration, and also in the shape of cut flowers for filling vases in winter. A few blooms of these, and a few of other light-looking flowers, together with Fern fronds, have a pretty effect in a vase, and are sure to be appreciated in winter. We grow a batch of them for conservatory decoration during summer; these are started the first week in April, and we keep potting a few the first week in every month during the first ten months in the year; this gives a good succession. Our stock of bulbs is upwards of 150. We sow a packet of seeds in March, the seedlings from which bloom in August and September, when the best of them are picked out and saved for stock, but as good bulbs may be bought cheaply, some who have but little room may prefer that course to sowing seeds. To the amateur, *Gloxinias* may be strongly recommended, seeing that they are at rest during winter when room is most valuable. They are neither difficult to grow, nor do they want much heat.—J. C., Farnborough.

LAST WINTER'S DISASTERS.

I HOPE that a careful record will be kept of the disasters among tender plants from the cold of last winter. Whatever has stood but slightly injured may be in future considered as safe. I am afraid Ireland, where the soft rains of the Atlantic and the high winter temperature have led to a good deal of experiment in planting out the hardier exotics, has suffered a good deal. I have lost *Fuchsias*, *Euonymuses*, *Veronicas*, and *Myrtles*; a noble *Cordylina indivisa* was killed; and on a south wall, where the plants were protected during the winter, a large *Mandevilla* has gone, as well as *Verbenas* and *Habrothamnuses*, and a *Magnolia* is much browned. All our plants of *Pampas Grass*, too, are dead. The place of which I speak is sheltered, and on the limestone plain in the centre of Ireland, which rises some 200 ft. above the sea level. At Charleville Forest, some twenty miles to the south, Laurels have been in many cases killed. Those very intelligent nurserymen, Messrs. Rodger, McClelland & Co., of Newry, write to me that the winter has treated them also very badly, though their stock is so large, they will soon repair the disaster. *Laurustinuses*, *Euonymuses*, and the large-leaved *Veronicas* are killed to the ground. *Ceanothus Veitchii* has proved proved quite hardy, even as an unprotected bush in the open ground. The *Azures* group is safe. *Gloire de Versailles* is alive and, happily, breaking. Curiously enough, by the side of squares of *Laurustinuses*, of which not a vestige remains above ground, hundreds of *Dracæna australis* rear their heads, the ends of the leaves browned, but otherwise uninjured. The small-leaved *Veronicas* are all safe; *Escalarias* are dead to the ground. I hear that *Rhynchospermum jasmoides* has stood perfectly in Sussex, and *Camellias* are green and vigorous where the common Laurel is brown, languid, and unhappy. I saw this at Lord Pelham's, near Folkestone—magnificent plants covered with bloom. Still, there is no reason for despair. The actual losses will very probably turn out less than was at first supposed, and we shall, at least, know better what to plant and what to avoid.

BRINSLEY MARLAY.

St. Katharine's Lodge, Regent's Park.

The weather here (Bromsgrove) for the past eight months has been very severe. We have lost cartloads of shrubs usually considered perfectly hardy, notably common Laurel, which has behaved badly, double *Gorse*, which is quite dead, *Berberis Darwinii*, *Cotoneaster microphylla*, and many others; our *Decidars* have lost nearly all their leaves and look like deciduous trees, and even common *Yews* and *Hollies* are cruelly scarred and damaged. I have very little faith in the fruit crops hereabouts.—H. M.

The Past Winter in Ireland.—We learn that there has been great destruction of trees and shrubs in the south of Ireland. Many of the fine plants at Fota, near Cork, are killed, including the New Zealand Flax, which grew in quantity there. The variegated forms suffered less than the green kinds. The *Dracænas* and the Tree Fern (*Dicksonia*) were also killed.

***Sarmienta repens*.**—This charming little Gesneraceous plant is one of the best we know of for growing in baskets, or suspended pans, or pots in a greenhouse. The slender very creeping stems hang gracefully over the sides, and for a long time during spring bear a profusion of bright scarlet tubular flowers, which are very showy, especially when seen in quantity, as we saw a few days ago in Messrs. Veitch and Son's nursery, at Chelsea.

LOCAL INFLUENCE ON VEGETATION.

"My garden is unfavourably situated on a clay subsoil, but this can scarcely influence to an extent so injurious plants grown under glass in soil suitable to them, more especially as the evil of which I complain is *increasing*" (p. 356). "Some of the houses have been built *fifteen years*" (p. 404). Several professional cultivators having agreed to differ about this mystery, may I be permitted to suggest that the words in italics in the above extracts contain the solution of "E. T.'s" difficulty. The glass having in the course of its long exposure to light changed to a yellowish, non-actinic tinge, and the statement that the influence first shows itself in arrested growth of the foliage would seem to confirm my conjectures. I would call the serious attention of horticulturists to the evil influence that discoloured glass must have upon plants submitted to its killing care, a point either unknown to them, or disregarded as of no importance. Another matter to which no attention appears to be given is the extremely varying quantity of actinism which we get on different days. I know, as a practical photographer, that on arid, blue-sky days, with the wind in the north and east, the power of the light is trifling compared with that which we get with a south or west wind, bringing up moisture and almost self-luminous masses of cloud; and it is not the mere moisture that makes the difference, but that ever-varying property of light, which we call actinism, that ought to obtain some attention from those engaged in forcing, if from no others.

LONDON STONE.

— May I be allowed to state that I have been in the employ of "E. T." as head gardener ten months, and that during that time I have had no interference whatever as regards the management or treatment of his plants; also that I have every requisite required for plant-growing. I can also testify to "E. T.'s" practical knowledge of plants and their requirements. I have never before experienced such difficulties in the way of plant culture as I have met with here; the plants to which "E. T." especially refers almost refuse to grow, and for what reason I am utterly at a loss to guess. Cuttings strike freely and also root well after potting, and for a time the roots remain healthy, but from want of growth they, too, become effected.—W. G.

Plants Uninjured by Rabbits.—As my place is infested with rabbits, I have made a list of shrubs, &c., not injured by these vermin, and if any one can add to it I shall be much obliged. I call certain plants rabbit-proof, but my experience, of more than twenty years, has shown me that there are individual rabbits from which nothing is safe—"dog in the manger," in fact—which, from sheer mischief, bite things that they will not eat, especially attacking what is newly planted, and going back day after day to finish the mischief, unless the plant be protected. I find the stems easily preserved by rolling loosely round them a few Briers, or even placing upright twigs of any sort round the stem, and tying them closely to it. This, of course, does not apply to the protection of the outer branches, but only to hinder them from barking the stem. I find dabbling with mud also very often effectual. My list is as follows: *Andromeda Catesbei*, *A. formosa*, and some others, excepting *A. polifolia* and *cassiniefolia*; *Aracarias*, *Arbutus* (including *Pernettyas*), *Aucubas* (when large), *Azaleas*, *Berberis* (except *stenophylla*, which is cropped at the points), *Box*, *Black Thorn*, *Butcher's Broom*, *Brier*, *Corchorus japonica*, *Cryptomeria elegans*, *C. japonica*, *Cupressus Lawsoniana*, *Chimonanthus fragrans*, *Chionanthus virginica*, *Deutzias*, *Elder*, *Euconymus*, *Heaths* (except sometimes *E. herbacea*), *Epimediums*, *Gaultheria Shallon* and others, *Helleborus*, *Hollies* (only when old), *Honeysuckles* (climbing and *Tartarian*, &c.), *Ivy*, *Junipers* (except the berry-bearing very small), *Kalmias* (of sorts, except *K. glauca*), *Ledums* (of sorts), *Laburnum* (except when small), *Laurels* (only when large), *Lilacs*, *Mahonias* (except when very small and newly planted), *Menziesias*, *Myrica cerifera*, *M. californica*, *Periwinkle*, *Podocarpus*, *Polypoda Chamæbuxus*, *Privet*, *Quercus Ilex* (*Evergreen Oak*), *Retinospora eriocides* (all of which greedily eaten), *Ribes sanguineum*, *Rhododendrons* (except dwarf small-leaved kinds, which are sometimes cropped), *Rhodora canadensis*, *Roses* (generally), *Savin*, *Sweet Brier*, *Spiræas* (both herbaceous and shrubby), *St. John's-wort* and other *Hypericums*, *Syringas* (*Philadelphus*), *Thuja Lobbi*, *Thuiopsis borealis*, *Weigelas*, *Wellingtonia* (?), *Yews* (of sorts), the common *Taxodium*, and the upright *T. japonicum*.—M. C. D.

Alpines on Walls.—This plan of growing Alpines we saw a few days ago in Mr. Latimer Clarke's garden at Sydenham Hill, in which a wall, built slightly in a slanting position and facing south, was thickly covered with numerous Saxifragas, Primulas, Androsaces, and similar plants, all thriving vigorously, their only point of attachment being the narrow layer of soft mortar between the bricks. The wall is backed up with soil—in short a sunk fence or ha-ha, and this probably keeps the mortar moist.

PLATE CCLXXXI.

ERITRICHIMUM NANUM AND PENTSTEMON HUMILIS.

E. nanum.—Most people are acquainted with the interesting little Forget-me-not (*Myosotis alpestris*), which inhabits the Scotch mountains, to which this, the loveliest of all Alpine gems, is a near relative, but it far excels it in the intensity of the azure-blue of its small blossoms, a colour only equalled by some of the Alpine Gentians, such as *G. verna* and *G. bavaria*. Though it has the reputation of being somewhat difficult to cultivate, a fair amount of success may be ensured by planting it in a compost consisting of finely-broken limestone or sandstone, with the addition of a small quantity of rich fibry loam and peat, and selecting a spot for it in the rock garden, where it will be fully exposed, and the roots in proximity to masses of half-buried rock, to the sides of which they delight to cling. Being always found growing naturally in stony places and continually watered by myriads of snow rills, due observance should be paid to providing it with an abundant supply of water during spring and summer, but it should be withheld in autumn. The chief enemy with which one has to contend in growing this little gem, and indeed all other Alpines which have silky or cottony foliage, is excessive moisture during winter, which causes them to damp off in a short time; in their native habitats they are covered with dry snow during that period. To obviate this some recommend planting it where an overhanging ledge protects it from rain, &c., but if such protection be not removed during summer, it has an injurious effect, causing, as it does, too much shade and dryness. A better plan is to place two pieces of glass so as to form a ridge over the plant, thus keeping it dry, and at the same time allowing a free access of air at the ends, but these should be removed early in spring. It is a native of Europe, and is widely distributed, as it is found along the whole range of the Alps from Carniola to the south of France, and it revels in the clear rarified atmosphere of the loftiest summits often as high as 10,000 ft.

Pentstemon humilis.—With but few exceptions, many kinds of Pentstemons that have come to us from the Far West grow from 1 ft. to 2 ft. in height, but this diminutive Alpine species, which inhabits lofty regions on the Rocky Mountains, seldom exceeds 9 in. in height. It forms compact tufts, and is remarkably free-flowering, and the blossoms, which are large for the size of the plant, present a very attractive appearance, on account of their pleasing blue colour, diffused with a reddish-purple hue. It should be planted in the rock garden in the most select spot and fully exposed, using a compost of gritty loam and well-decomposed leaf-mould, and during summer it should be copiously supplied with water. W. G.

Hardy Flowers at Kew.—Amongst the most noteworthy of those now in flower may be named the Carinthian *Wulfenia* (*W. carinthiaca*), a pretty dwarf rock plant, growing about 6 in. high, with a tuft of finely toothed leaves, from which spring flower stems terminated by a dense cluster of small purplish-blue flowers. The purple-flowered variety of *Polygala Chamæbuxus*, figured in *THE GARDEN* (Vol. XIII., p. 36), makes a charming little rock plant. Its pink Pea-like blossoms with a yellow keel are produced plentifully, and are very attractive amidst its small Box-like foliage. The Himalayan *Primula Munroi* is flowering very freely, its pure white blossoms, rising from deep green tufts of small oval leaves, being very effective, and rendering it a most desirable kind. A rare member of the same family is the Obtuse-leaved *Androsace* (*A. obtusifolia*), with small umbels of pure white blossoms with golden eyes. Another exquisite Alpine is the Pyrenean form of the Alpine Forget-me-not (*Myosotis alpestris*), of which a coloured illustration was given in *THE GARDEN* (Vol. XI., plate LXI). Nothing can be prettier than cushion-like masses of this plant, not more than 1 in. high, studded profusely with small flowers of the deepest azure-blue, with a very small yellowish eye. It is a notable fact that this Pyrenean form is far more robust in constitution than the Scotch form; as a cultivated plant, it is therefore preferable. Of the numerous kinds of *Fritillaries* now in flower, the most desirable is *F. pallidiflora*, a really handsome kind, that grows about 1 ft. high, and has rather broad very glaucous leaves from the axils, of which large white blossoms are produced plentifully, and have a very pretty effect, drooping, as they do, so gracefully. *F. pyrenaica* is another handsome kind, the flowers of which are bell-shaped, of a vivid purple hue outside and yellow within. *Muscari compactum*, one of the newer kinds of Grape Hyacinth, is a pretty addition to that class of plants. It much resembles *M. neglectum*, as regards its blue-black flowers, but is larger in all its parts, more especially the foliage, which is much broader.—W.



DWARF ROCKY MOUNTAIN PENSTEMON [P. HUMILIS]



FAIRY BORAGE [ERITHICHTIUM NANUM]

GARDENING FOR THE WEEK.

Flower Garden.

Though the season is advancing, considering the necessarily low temperature of the ground through lack of sunshine, nothing will be gained by planting out tender bedding plants till there has been a few days of bright sunshine. Meanwhile, however, the plants should be subjected to the hardening-off process by placing them under the shelter of trees, walls, and turf pits, and the more tender kinds, such as *Coleus* and *Alternantheras*, must still have the protection of glass. *Calceolarias*, *Verbenas*, and *Lobelias* will stand 2° of frost; these may therefore be planted together with all hardy plants, and the putting out of the tender kinds will then be quickly accomplished as soon as favourable weather has set in. There are two requirements of especial importance as regards successful planting; the first is, that the roots be in the same state as to moisture as the ground to which they are to be transferred; and the other is, that the soil be well compressed about the roots. Beds or borders intended for small seedlings, or for plants that are to be put out without balls of earth, should be previously well watered; and if partial shade, such as that afforded by evergreen twigs, can be given, they will start into growth the more readily. Advantage should be taken of showery weather to thin out and transplant *Asters*, *Stocks*, *Phlox Drummondii*, *Zinnias*, and other annuals; also biennial plants, such as *Antirrhinums*, *Pentstemons*, *Wallflowers*, and *Sweet Williams*. In dry weather surface-stir the soil amongst herbaceous plants and shrubby borders, a process which has the three-fold advantage of destroying seedling weeds, aerating the soil, and ensuring neatness, without which no garden can be fully enjoyed. *Clematises*, *Wistarias*, and other climbing plants are now in rapid growth, and will require some little attention as to training, in order to prevent injury from high winds. One of the most telling and natural modes of training, if such it can be called, for *Clematises* is to let them ramble at will amongst a few *Hazel* branches in quiet and retired nooks in pleasure-grounds, associated with shrubs of any kind. This manner of growing them is most suitable. *Roses*, in spite of the cold, seem to be pushing very strongly, and, at present, are free from aphides and maggots; but doubtless both will shortly make their appearance, when summary measures for their expulsion should be taken by syringing with soapy water or Tobacco liquor for aphides, and hand picking for maggots—the only certain cure and, if taken in time, the quickest. —W. W.

Auriculas.—Those who are saving seeds of these will not be able to repeat the plants until July or August. We always put aside some plants from which to save seeds, which take nearly three months to ripen from the time of the setting of the blossoms. Some difference of opinion exists as to the best position of the plants when the seeds are ripening. Some fancy that they should be rather freely exposed to the sun; however, I prefer placing them behind a north wall, or in other positions where they have the sun for a few hours in the morning, and again in the afternoon when its rays are not so hot as at noon. I had a letter from one of the best growers in the north last week; he says, "Auriculas are looking well, and I intend to begin potting at once." He can only get at his plants at night, and it will take him just a month to finish potting. Saturday afternoon is a great boon to amateurs of this kind. Ordinary lovers of flowers have little idea of the shifts to which enthusiastic "specialists" are driven in order to effect their purpose. See that the loam used is not infested with wireworms; if it is, they must be carefully removed by hand-picking. Next to the quality of the loam, the drainage is most important. If a sort of delicate constitution be allowed to remain in a pot wherein the drainage has been choked by the compost working in amongst the pots, probably the plant will die, or, at least, become so debilitated that it will take years to recover.

Carnations and Picotees.—This week we have begun to place sticks to the stems of our plants. It is best to do this in an early stage of their development, otherwise they are apt to be broken over near the surface of the ground. If there be any green fly on the plants, remove it with a brush while the work is in progress, or it may be convenient to dust them with Tobacco-powder. If any scarce varieties be throwing out growths near the base of the stem, and that are too high up to be layered at the right season, they may now be slipped off and put into pots, placing the latter under a close hand-glass behind a north wall, where I allow them to remain for ten days or more, and then place the pots in a frame with a gentle bottom heat; treated in this way, most of them will form roots, and be stronger and better than those layered in the usual way. Seedlings will also require attention; if they are large enough to handle, let them be pricked out an inch or more apart in pans or boxes. Pay attention to watering the growing stock in pots; it has

not yet been necessary to do this in the case of those planted out in beds.

Hollyhocks.—The weather is now warmer, and plants put out early are making considerable growth; a single stem only should be allowed on each plant. Red spider does much injury to the Hollyhock in warm, dry weather; it is therefore well to see that the leaves are quite clean during their early stages of growth. Seeds sown in fine soil in the open ground would still grow strong enough to flower well next year, or the seeds would vegetate more readily if sown in pots or pans, which could be placed in a gentle hotbed.

Gladioli.—If seeds of these were sown as recommended on a hot-bed in April, the plants will now be strong, and in order to get good bulbs that will flower well next year, see that they do not suffer from want of water when in a growing state. I remove the glass lights from the frames in the daytime when the weather is fine, and replace them at night. In cold days the lights are merely tilted a little at the back; nor do I let them get rain, unless it be a warm gentle shower, which does good. A few bulbs may yet be planted for the latest bloom. Keep the hoe at work amongst those that have appeared above ground, and as soon as dry warm weather sets in give a good watering, and then mulch the surface of the beds with rotten manure.

Hardy Primulas.—I see that "A. D." comments on my notes on these last week. I never said the plants were not quite hardy; but I planted some out-of-doors ten years ago, and they gradually dwindled away. I had two or three dozens of them out-of-doors this year, and the leaves were quite disfigured by wind and rain. In a sheltered nook on the rock-work at Chiswick I saw a plant of *P. amena* looking remarkably well; but it was almost as snug as if it had been under glass. My plants are now in full beauty, and are well worthy of culture for greenhouse decoration; but out-of-doors they can only be planted in exceptional positions.

Tulips.—Beds of these are now becoming interesting even to the ordinary observer. In one bed a few hybleum breeders are now in flower, and very beautiful they are; they contrast well with some flamed and feathered bizzars in juxtaposition to them. When one looks at the beautiful feathering on some *Tulips*, and the chaste beauty of the rose grounds, it does seem strange that they should have gone so entirely out of fashion. Their time will no doubt come round again; indeed, one grower in the north of England, failing to get a satisfactory bloom, owing to the late spring frosts, has built a glasshouse to cover his beds, and it is a treat to see the beautifully healthy glaucous foliage that has been produced under such favourable conditions. —J. DOUGLAS.

Greenhouse.

Camellias.—Where sufficient numbers of these plants exist, and are managed in a way to yield a long succession of flowers, those that were in bloom before the close of last year will by this time have made their growth, and will have formed flower-buds that will be visible, and where any of such require potting, I should recommend that operation to be carried out now, when, as I know from experience, it will interfere less with their ensuing flowering than if it were performed at any other time. If it be done in spring just as growth begins, an unavoidable injury occurs to the roots that at once seriously interferes with the tax put upon them to support, commencing shoot extension when root assistance is most required. That this damage to the roots cannot be avoided, even if there be no further interference with the ball than the removal of the crocks, will be evident, as anyone who has ever potted *Camellias* must have noticed the extremely fragile character of their feeding fibres, which, previous to top-growth beginning, are in the most active condition if the plants are in anything like a healthy state. If the potting, with its consequent disturbance of the roots, takes place now, just as the buds are formed, it has no effect in retarding the season's growth, and the buds are not sufficiently advanced to suffer through the effects of the shift, as they would be almost certain to do to the extent of falling off if the operation be deferred later, and there is yet plenty of time for the roots to recover the breakage to which they have been subjected, and to get fairly established in the new soil, and be in the most favourable condition for supporting the expanding bloom when the time for its opening has come. From these observations it will be seen that where *Camellias* are managed in a way to give a succession of flowers, the potting cannot be carried out at any particular season, but should be performed as the plants in succession approach the bud-setting stage, already indicated. At the same time it may be well, perhaps, to inform beginners that *Camellias* will thrive with considerably less root-room, in proportion to the size of the tops, than many other plants, and that too large pots or tubs, especially when the plants are not in a vigorous state, are the most likely means of bringing about an unhealthy condition. I have often seen *Camellias* pointed out when somewhat weakly as requiring more root space when the opposite course should have been pursued, and

when the best way of improving them would have been to have removed a portion of the soil, replacing it by fresh material, and putting them in smaller pots or tubs for a time. They never should be repotted oftener than can be avoided, as they may be kept in a healthy growing state by the use of manure water, provided this be given at the proper time to be effective, which is immediately before and whilst the shoot growth is going on. It is no uncommon occurrence to hear an opinion expressed that liquid manure is of no use to these plants, and, from what I have observed in the matter, I very much doubt if it is, unless applied at the time above mentioned. Even in the case of plants that are fairly strong, and with sufficient root-room, I have found that whilst growing there is nothing more beneficial than liberal applications of root-water given in a clear state; it seems to agree with Camellias better than with most other plants; it strengthens the growth, gives a deep lustrous green to the foliage by which the appearance is much improved, and has a powerful influence in ridding the soil of worms. As to soil, some growers prefer loam, others peat. Where loam of good quality can be obtained, the plants will generally have more disposition to bloom in it than in peat; but in the latter the growth is freer, the foliage larger, and of a more pleasing colour. Whichever is used, the pots must always be well drained; sufficient sand must be added to the soil to insure porosity, not only at first, but afterwards, and in the potting the soil must be compressed, so as to make it thoroughly solid. The latest flowered plants will now be making their growth, which must be encouraged by a moist, comparatively close atmosphere, with more shade than is necessary for that portion of the stock that made their growth before the sun had so much power.

Azaleas.—As the latest flowered amongst these go out of bloom, all seed-pods should be immediately picked off and the plants placed in a house or pit, where a warm, genial, moist atmosphere can be kept up, giving air in the morning before the temperature has risen too high, and shutting it off early enough to enclose plenty of sun-heat. At the time of closing syringe thoroughly—not a mere sprinkling, but a good drenching—getting the water to the under surface of the leaves on all sides of the plants; by this alone can thrips and green fly be kept in check, and where these pests are found to exist, means should at once be taken to destroy them by dipping or syringing with Tobacco-water or fumigating. The latter is the quickest way, but I do not like resorting to it, as it often takes a stronger application of the smoke to kill the thrips than the leaves will bear. Any premature loss of foliage, either through this or injury sustained from the insects in question, is certain to show itself in the weakened condition of the plants, through which cause, more than all others, is directly attributable the unsatisfactory state in which Azaleas are often met. The earlier bloomed plants will now be in a condition to pot in the case of those that require it, but such as flowered later should be left undisturbed for three weeks or a month yet. Azaleas, like Camellias, are best without too much root-room for several reasons, one of which is, that if placed in large pots before they have attained a corresponding size, a time comes when the soil gets so permeated with roots as to necessitate still more room, which makes them inconvenient to move about and is not necessary, for by the use of concentrated stimulants, such as Standen's manure, which I have found far the best for Azaleas, using it from the time the plants were in small pots upwards, large specimens can be kept in a vigorous, free-growing, satisfactory flowering condition, with much less root-room than many subjects need. Keep the plants well up to the glass, and use no shading more than is necessary to prevent the leaves getting absolutely burnt; by being thus exposed to the sun, they will acquire a solidity and substance that will enable the plants to retain them in much larger quantities through the winter than when grown under the weakening influence of subdued light.

Coleus, Centaureas, Humea elegans, &c.—If a number of Coleus of the most effective varieties be grown in small or medium-sized pots from cuttings struck each spring, one of the most serviceable purposes to which they can be put is for use in greenhouses and conservatories during the summer and autumn until the temperature becomes too low for them to preserve their character. If a sufficient quantity be put now in 7-in. pots in good ordinary soil, and grown on in a cool stove or intermediate temperature, kept well up to the light, and stopped so as to enable them to branch out without any attempt to induce the low, flat form which these plants are too often made to assume, from their naturally rapid growth, they will, by the middle of July, be large enough for decorative purposes such as those for which they are intended. There are numbers of plants generally used as bedding subjects that are very serviceable potted on in like manner, notably the white-leaved Centaureas, such as *C. argentea*, *ragusina*, and *gymnocarpa*. If a few of the stronger examples of these raised from seed or cuttings be placed in 6-in. or 7-in. pots, and grown on in a frame or pit until the middle of summer, they will be of great use for placing amongst flowering or higher-coloured-leaved plants in

greenhouses, halls, or conservatories. When well managed, few plants have a more elegant appearance than the old *Humea elegans*, especially in large conservatories, but to have it in good condition it must not be stinted for pot-room, never allowed to want for water, and the under surface of the leaves should, from time to time, be examined in order to see that they are not affected with green fly or red spider, to both of which they are very subject. The bedding *Chamaepeuce Cassabona* is likewise well adapted to be used in the same way; also the large *Echeveria metallica* and the variegated *Coprosma Baueriana*. The last is a plant of comparatively slow growth, and one which is well deserving of cultivation in pots for conservatory decoration; it will succeed in either peat or loam, but in peat the foliage generally has the cleanest and brightest appearance. For standing on shelves or in positions where there is not room for large pots, a few of the best flowering *Lobelias*, especially the lighter-coloured varieties that have a free habit of growth, will be found very useful during the autumn. It may be said that some of the plants just named are common, and that their legitimate position is in reality in the open ground, but they are so distinct and well adapted for use in the way here indicated, that they afford a pleasing variety when it is most needed in greenhouses and conservatories.

Veronicas.—The late-flowering varieties of *Veronica*, of which *V. Andersoni* may be taken as an example, are indispensable for blooming through the last months of the year; they are so manageable that they will flower in either a small or large state, according to the size of the structure in which they are required, or the inclination of the cultivator; but the condition that they will be in at the time required depends upon how they are treated now. They may be either kept in pots plunged through the summer, or planted out in free open soil and then lifted in autumn. For such as are wanted in a large state, retention in pots will probably be the best way, provided they are regularly attended to with water, from a deficiency of which plants thus turned out often suffer. If that be likely to occur, it is better to have them planted out where the roots, to a certain extent, can make shift for themselves. In the case of plants struck in winter or during this spring, I should give a decided preference to planting them out, as they will probably attain double the size they are likely to reach in pots. A good open situation should be chosen for them, and all plants of a similar description, away from trees or other influences likely to draw them up weakly.

Tree Carnations.—These indispensable winter-flowering subjects, through the press of other matters during summer, do not always get the attention which they need. To get spring-struck stock up to a useful size before autumn, it must have timely moving into pots large enough to admit of its full development; at the same time it is not well to give it more root-room than is necessary. The principal thing to avoid is allowing the plants to remain in the little pots which they occupy too long, by which means the roots get into a stunted condition, and the best of the growing season is over before they attain any size. Plants that have bloomed and that were shaken out and repotted will require constant attention as regards water, as the pots get full of roots, and sufficient support by sticks and ties should be given to keep them from falling about in an untidy way. In doing this, however, avoid compressing them into that broom-like form to which they are sometimes subjected, and which has a direct tendency to aggravate the natural disposition which some of them have to spire up weakly. On the appearance of green fly, dip or fumigate; the former is frequently the most effectual, as on these plants aphides seem more tenacious of life than they do when fed on the juices of some others.—T. BAINEs.

Hardy Fruit.

While the weather remains so uncertain one can only reiterate the necessity there still, unfortunately, is to guard wall fruits against cutting winds and frost. Notwithstanding the unfavourableness of the season, the fruit prospects here continue excellent; Apricots are good; Peaches are all that could be desired; Pears, Plums, and Cherries the same; small fruits heavy crops. Apple blossoms, though not yet open, were terribly injured by the frost on the morning of the 10th, when the thermometer fell to 24°. We may now reasonably hope that the end of the winter has been reached, but till there is a decided change let the breastwood on Pears, Plums, &c., remain intact, as this will give some little protection to the tender fruit, and its removal at this early stage of growth, though desirable, is not imperative. No quarter should be given to aphides, for if not attacked as soon as perceived, at this season they soon destroy the prospects of a crop of Peaches, Cherries, and Plums, all of which are peculiarly liable to be infested by them. The cheapest and most effectual remedy is soap-suds, applied either by means of the syringe or garden engine; since we have applied these, we have never remarked any evil consequences, such as are likely to follow the application of some at least of the many decoctions that are offered for

their destruction. Curled and blistered Peach leaves should be picked off, and if mildew appears dust the affected parts thickly with sulphur. The surplus fruit of Apricots should now be picked off; Peaches will also require the same attention, but at present these should be thinned but sparsely, and disbudbing should now be completed. Any injury that Strawberries have sustained consequent on such a protracted winter is, after all, more apparent than real, as they are now throwing up their flower-stems as strongly as ever, and though the greater part of the old foliage has decayed, the growth of the young leaves seems to have been the more vigorous in consequence, and there is now promise of a good Strawberry season. Strong plants that have thrown up a number of flower-stems should have the weakest of them removed, more especially when fine dessert or exhibition fruit is desired. If not yet mulched, such an operation should no longer be delayed, as in the event of dry weather setting in it will prevent the necessity for watering, and in the meantime will nourish the plants. Plant out recently forced plants, and for the present, having a view to autumn fruiting, keep the flower-stems picked off. Thin out any unnecessary shoots or suckers of Raspberries, retaining about four of the strongest to each stool. Raspberries are free feeding and moisture-loving plants, and soon suffer from drought; therefore the ground about them should now be covered with good manure, which will serve both purposes, and repay the labour bestowed by producing finer fruit. Where grafting has been done persistently rub off all shoots that spring from the stock, and occasionally examine the grafts, making good any injury that has happened to the clay from frost or drought.—W. W.

THE FRUIT GARDEN.

VINE FAILURES.

THE irregularity with which "E. D. T.'s" Vines (p. 385) are breaking is, no doubt, owing, as he surmises, to the winter dressing the stems received, for if the solution applied were at all strong, it would be sure to destroy or injure the buds, and damage the bark as well. More harm is done to fruit trees by the use of insecticides when they are in a dormant condition than most people imagine, and the failure of crops arising through it is generally attributed to other causes instead of the right one. I have known instances of Peaches and Nectarines suffering so much from a strong winter dressing as to cause them to shed the whole of their buds, and so cripple their health that they were a long time before they recovered again. Vines will stand more, but the practice of annually barking and painting them over is a bad one, as it serves no useful purpose, and takes from the plant that which Nature intended as a protector to the inner rind, a part that should not be needlessly exposed, for if it is, the light and air acting on it causes contraction, which greatly impedes the flow of sap and the swelling and growth of the wood. I do not see how it is possible that Vines which have hitherto been in such a satisfactory state as those "E. D. T." is concerned about appear to have been can have failed all at once through anything having gone wrong at the roots, unless they are partly eaten by the larvae of an insect, such as those of the *Otiorynchus*, figured in THE GARDEN a short time ago, and which are most destructive to Vines; so mischievous are they, that they eat long furrows in the main roots, and in places nearly divide them, thus cutting off the principal channels for the flow of the sap, and leaving their feeders beyond utterly useless. Some years ago I had a border sadly infested by these grubs, and before we could get rid of them they did a great deal of injury, and had it not been for renewing the soil, it is quite likely we should have been plagued with them yet.

Another likely cause to affect the Vines in question is that they may have fungus generated around their collar, a thing that frequently happens when they are planted inside and kept dry, as is generally the case if the stems are wholly under cover, as then the decomposing bark seldom gets wetted through, and is therefore just in the condition favourable for the spread of the mycelium that does so much harm to vegetable life. There is one thing about this, its presence may be easily detected by making an examination of the suspected part, and if the fungus is there it will be apparent by the whiteness of the inner portions of the bark, besides which it always gives off an offensive odour. Minute, and of little consequence as such a parasite may appear, it paralyses the whole action of plants, and not only quickly throws them out of health, but, after a time, destroys them altogether. Being out of sight, such an insidious enemy is seldom suspected or even thought of; but I am of opinion that more Vines and fruit trees suffer from it than from any other malady. Should those belonging to "E. D. T." turn out to be so affected, I would recommend the whole of the outer loose bark about the collars to be removed, and that part to be scrubbed with soap and water, and

afterwards coated with thick liquid lime and clay painted on by means of a brush. This dressing will destroy all the fungoid growth it comes in contact with, and will not in any way injuriously affect the Vines; but to keep them free from such a scourge in future, attention should be given to see that the border at the particular part where the Vines stand does not get into a too arid condition, or have any decomposing vegetable matter, such as leafy manure, lying long on its surface. If the roots of the Vines be healthy, and the injury results from the winter dressing, the best way will be to run up fresh young rods from near the bottom by making choice of the shoots most conveniently situated, as the chances are that the old ones will never break regularly again, owing to the spurs having perished. The house may then be refurnished and the Vines in profitable bearing again in less than half the time it would take if replanted; for, under the most favourable conditions of growth, young rods should not be allowed to carry a full crop under three years, or the strain will tell on them afterwards. The Vines being planted in the way "E. D. T." describes, that is, immediately in front of the arches and close to the wall, are in as favourable a position as it is possible for them to be, and they are sure to find their way out without any coaxing or disturbance; and, as the border appears to have been well prepared, the wisest course seems to be to let them alone.

Without an examination it is almost impossible to say what is the real cause of their having gone amiss; but these conjectures may help to elucidate the mystery and be of some assistance in getting them right again. As failures and the knowledge of what has led to them often do more to benefit others than recorded successes, perhaps "E. D. T." may be kind enough to inform us at some future time what discovery he has made with respect to his, and the means he took to remedy the same. S. D.

EXPOSING STRAWBERRIES TO THE SUN.

NOTHING tends so much to deteriorate the flavour of Strawberries after being gathered as to leave them exposed to the sun, the heat from which at once sets the juices contained in them in a state of fermentation, and converts the saccharine matter into something little better than vinegar. The same action takes place, though in a less degree, with such fruit as Peaches and Nectarines, and does not in any way improve any other fruit after being plucked from the plant, as even in the case of Apples and Pears the tendency it has is to cause them to shrivel instead of allowing them to ripen properly. The cooler and drier fruit can be kept when gathered till used the better, as that is the only way to preserve its true flavour, and another matter of great importance connected with it is to see that it is not bruised or damaged in the handling, either when picking or dishing it up. I have seen servants when engaged at this latter work take hold of Strawberries between the thumb and finger, and handle them with no more care or thought to all appearance than they would use in the case of an uncooked Potato, and the same with Grapes, which they rub all the bloom off; while as to Peaches and Nectarines, the bruising which they receive, unless eaten immediately, soon causes them to become decayed. This indifference on the part of those who have to dish fruit is no rare occurrence, as most gardeners can testify, but to know that it is so is very provoking, as the productions on which they pride themselves seldom get placed before their employers in the condition they ought, and the result is that they are often subjected to blame through the shortcomings of others. Not only are Strawberries injured by being exposed to the sun after being gathered, but the same thing happens to those in pots if subjected to the full solar rays after this season, the great heat being more than the fruit will bear, and so trying is it that I have often seen the seeds roasted, as it were, and the Strawberries containing them quite browned and completely dried up. This is sure to happen if the plants get the least dry and the fruit thereby checked in its swelling, but as a safeguard where late ones are grown it is always advisable to turn their backs to the south and let the fruit droop away from the sun, so that it may in a measure be screened by the foliage. It will be found, if this is done, that the fruit will not only swell faster and grow considerably larger, but that the quality will be altogether finer, although a certain amount of sun is necessary, but much at this time of year is a thing to be guarded against, as it is a frequent cause of rendering the late lots of these useful fruits inferior to those gathered early in the season. In picking Strawberries for use, they should always be got early in the morning, that is, before the sun shines on them, and before the plants receive any water, as this is quickly conveyed to the fruit, which it makes flat and insipid in flavour. S. D.

Pot Strawberries and Frost.—I have maintained in THE GARDEN and elsewhere at different times that pot Strawberries might be exposed to severe frost for a long period without suffering the

slightest injury or having their fruitfulness impaired when they came to be forced, an assertion which has been so emphatically contradicted by others. The examples of Strawberries furnished to THE GARDEN office this week by Mr. Muir should, however, set the question at rest, I think. These Strawberries (about a dozen large, richly-coloured fruit to a 3-in. pot), we are told, are from plants that have, during all the last severe winter, stood unprotected and "hard frozen,"—J. S. W.

STRAWBERRIES FOR MARKET.

I AM quite willing to acknowledge that Mr. Cornhill (p. 402) knows more about market gardening than I do, nor do I doubt the ability and success of market gardeners generally in the culture of fruit. I believe that we private gardeners have learned much from them; but the question between him and me relates to his assertion that Vicomtesse Héricart de Thury was of "little use to market growers," who, he further adds, are "obliged to confine themselves to such varieties as are of delicate constitution" if they desire to get a good price for their fruit. This is a definite enough statement, and is what I undertook to controvert from the papers of "C. W. S.," whose impartial and disinterested statements on the subject, and the evidence of my own eyes, I choose to accept as being probably nearest the truth. In THE GARDEN of April 12 he mentions Sir Charles Napier and Vicomtesse Héricart de Thury only as the most popular for market purposes, and we have Mr. Cornhill's word for it that the latter is an inferior kind; and I shall be surprised if many gardeners who know much about Strawberries will coincide in describing "Sir Charles" as anything but a second or third rate kind of vigorous constitution. Allow me also to inform Mr. Cornhill that I do not confound forced with out-door fruit, which he admits is gathered as soon as it is coloured, and for the same reason, probably, that forced fruit sent to market is gathered in the same state. I spoke, however, of Strawberries in April, a season when out-door crops are not fit for market, I imagine, and those that I tasted were offered at 15s. or 20s. per lb. retail, if I remember rightly. As to the assertion that Sir Charles Napier can be grown so "as to be almost as rich and luscious as a British Queen" under glass, I can only say that I doubt the fact. I admit that Strawberries can be grown to as great perfection under glass, under favourable circumstances, as out-of-doors; but to say that they can be improved to the extent of converting a Sir Charles Napier into a British Queen, is surely seeking to tax one's credulity too far. Sir Charles Napier is a favourite kind with market gardeners because it is a sure grower and bearer, and produces handsome, if not very good, fruit. As regards his asserting that Black Prince does not pay for the labour of watering it, I can state that two years ago, when we had a surplus of this kind, I sent a quantity of it to the Manchester market, and in competition with the London-grown fruit which is also sent there I received for the first lot 20s. per lb.; for a similar quantity the week following, 15s. per lb.; and the next week, 10s. per lb. This was in April, when forced Strawberries were, comparatively speaking, plentiful. In the same town, and at the same time, a private buyer gave 25s. per lb. for the same kind. I can vouch for these facts if needful, and if such prices will not pay for watering, I would ask Mr. Cornhill what he considers a commonly remunerative price for the best he can produce at the same season? This year about the middle of April, Covent Garden prices were given at from 4s. to 10s. per lb. Within the present month of May I have seen Black Prince Strawberries from a private garden sold in Manchester for 6s. per lb. to a fruiterer who had his window full of London-grown Sir Charles Napier of fine appearance, but far behind the fine black gloss on berries of the "Prince" which were sent to the market just to fetch what they could, the market day being over, and the shops supplied.

J. S. W.

THINNING GRAPES.

No one can tell exactly what would be a reasonable crop for a Grape Vine to carry without knowing something of the age and strength of the Vine; a pound per footrun of rod may be a reasonable crop for a healthy Vine on the average to produce; and something may be done in feeding in critical times, such as the stoning period, to enable a plant to bring to perfection a heavy crop. But plants will not maintain their health long if overdone with stimulants, therefore the safest plan to pursue is to find out the limit of production, and not exceed it. If it be necessary to form a correct estimate of the bearing power of the Vine before deciding as to the number of bunches it shall be permitted to carry, it is still more so before thinning out the berries, as some Vines will produce berries half as large again as those of others, and that, too, independently of the skill brought to bear upon their cultivation. Take the case of the Black Hamburg—still the most useful and most popular variety

grown; there is considerable variation in the size of the berries, even when the Vines are receiving the same treatment, often, indeed, in the same house.

The sooner Grapes are thinned after it can be seen which berries are taking the lead the better, cutting out the small berries, as some of these may be imperfectly set. At any rate, those that take the lead generally keep it, and a sufficient number of such berries should be left to form compact handsome bunches. With some loose bunched kinds, such as the Barbarossa, it is a good plan to reduce the bunches a little, by cutting off their extremities. It is not easy to say how large a proportion of the berries should be cut out; in fact, without seeing the Vines it must be mere guess work, but at least two-thirds, and, in some instances, the large-berried kinds, as Buckland Sweetwater, Madresfield Court Muscat, &c., may be thinned more severely, but it is best to go over them a second time unless one is quite sure of the size which the berries will ultimately reach, as it is not pleasant to contemplate bunches lank and loose from too severe thinning. To thin Grapes well requires considerable judgment, as well as knowledge, of the strength and constitution of the Vines, and this can only be acquired by experience, accompanied by careful observation. The berries in thinning should not be touched with the hand. With a small smooth stick in one hand, and the scissors in the other, the bunch can be manipulated with ease without touching a berry. Grapes that are intended for late use should be thinned more than would be necessary if they were cut as soon as ripe; and large bunches should be well thinned out in the centre, or the moisture will lodge in the bunches and induce early decay.

E. HOBDAV.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Grapes from Vines Struck from Eyes the Same Year.—May I trespass on your pages to say farther in reference to this subject that I sent Mr. Henderson, of Thoresby, the paragraphs from THE GARDEN by Mr. Groom and myself, in case Mr. Henderson might have overlooked the matter, and have received the following reply: "Of course Vines can be fruited the same year in which they are struck from eyes, and you can make any use of this letter you like. The plan succeeded with me. I adopted it when our houses were all new, as you will remember, and when our permanent Vines were only growing, and, under similar circumstances, I should resort to the same plan again, and get good average crops of Grapes from the Vines." From this it will be perceived that "the possibility of getting anything worth calling a crop," as Mr. Groom expresses it, is placed beyond a doubt, and that on some occasions the plan may be well worth adopting.—J. S. W.

New Plan of Filling a House with Vines.—Mr. Simpson (p. 324) may suppose that the practice which he describes of running a cane up the full length the first season and allowing it to remain is new, but in this he is mistaken. I have tried the same plan more than once, and have much often seen others adopt it, but the result is the reverse of any gain, for there is always a disposition in the case of Vines so treated for several years to push an excess of vigour into the spurs towards the top, and to leave the lower ones proportionately weak, independent of the most careful management in getting them to break the first season. Mr. Simpson says the usual way is to cut the first season's growth down to the bottom wire at pruning time, and during the next few years to leave a few feet of wood every season until the Vine is furnished, a practice which takes from five to six years according to the size of the Vinery. This seems slow work, and if Mr. Simpson is satisfied with furnishing a house at this rate, no one else need complain, but it would be much too slow for most people. The practice which he imagines to be new, and that which he describes as the usual course followed, are two opposite extremes, midway between which most people, who have any claim to being successful Grape growers, would steer.—T. BAINES.

—Allow me to state that Mr. Simpson's plan of filling a house with Vines is not new. Several houses have been planted on the same plan about Bishop's Stortford, and with such good results, that more houses have been planted and filled and managed on the same plan. Amongst them I may name a span-roofed Muscat house about 100 ft. long.—W. T.

Rapid Pine Growing.—Permit me to ask "M." (p. 403) if he would kindly state whether the Pines which produced such rapid and excellent results were planted out in the pit or confined to pots, and what the variety was. In list 4 he states that from a pit planted with rootless suckers on February 7, 1878, fruit was cut in succession from July 6. This, according to the list, shows excellent results in the short space of five months; whereas, under the general mode of cultivation it takes about eighteen months. Is there any mistake in the statement, or is it a fact?—E. C. P.

ROSES.

ROSE BORDERS.

A ROSE border, to be worthy of its name, should furnish Roses at least half the year through. To accomplish this, resort must be had to all classes, and the best result will be obtained by choosing the freest blooming varieties in each. Whether the plants should be standards or dwarfs seems almost immaterial, excepting as a matter of individual taste or surroundings. Dwarfs, especially those on their own roots, are generally considered more elegant and natural, and have further the advantage of producing their flowers in greater quantity, and in a manner that renders them more agreeably effective. Certain sorts, also, thrive well as dwarfs, but make very indifferent standard plants.

Some of the earliest Roses that grace an English summer are the Briers, the best of which are the Persian Yellow and Harrisoni, together with the unique Copper Austrian, which should be in every mixed Rose border. Following closely on these are the miniature Provence kinds, the best of which—De Meaux and Spong—being dwarf in growth as well as small in flower, are most suited for the front row or for edging. About the same time as these the various Moss and Provence Roses begin to open, and are speedily followed by such gorgeous summer bloomers as the Damask, Madame Hardy, Madame Soetmans, and Ville de Bruxelles; the alba—Félicité (Parmentier), Madame Audot, and Madame Legras; the French or Gallica—Blanchefleur, Cynthia, D'Aguesseau, Cillet Parfait, and Village Maid; and the summer



A Rose Border.

flowering Hybrids—Charles Lawson, fulgens, Madame Plantier, Chéné-dols and Paul Ricaut. By the time these are on the wane we have the Hybrid Perpetuals in full beauty, and as they fade we may still cut Roses in profusion far into the autumn from such beautiful kinds as the Bourbons—Queen, Queen of Bedders, Souvenir de la Malmaison; the Noisette—Ellenberg, Celine Forstner, Bouquet d'Or, Rêve d'Or, and Triomphe de Rennes; the China—Cramoisi Supérieure, Ducher, Fabvier, Mrs. Bosanquet, and the ever-blooming common pink monthly Rose; whilst such Tea-scented varieties as Safrano, Marie van Houtte, Sombrenil, Jean Ducher, Marie Guillot, are sufficiently hardy to withstand the cold of an ordinary English winter. Other Tea-scented Roses, such as Gloire de Dijon, Madame Berard, Madame Trifle, Belle Lyonnaise, and probably the new Reine Marie Henriette will also give fine crops of autumnal blooms, but require training in a special manner. The main shoots should be but slightly shortened in pruning, and bent to the ground and there secured to pegs. The laterals should be spurred back in a similar manner to that in which Vines are treated, and will be found to produce a fine lot of flowers, many of them also making sufficient growth to be treated as main shoots the following year. Roses of this class should, however, be planted sparingly, unless space be of no consideration.

If the Rose border by chance be backed by a wall with a southern exposure, the season for Roses may be accelerated by almost a month, as certain of the Tea-scented and Hybrid Perpetual kinds will open their flowers in an ordinary season in such a situation in May, and such a wall would offer a fine opportunity for cultivating such distinct and beautiful varieties as the Banksian Roses, white and yellow,

the Macartney, single and double, Fortune's yellow, and the old Rosa sulphurea, sometimes called the Burghley Yellow.

The Rose border should be planted in the autumn, excepting the Tea-scented and China varieties, which are best left till spring. Pruning generally should be done in March, the tenderer kinds a month later. The plants should be mulched with short manure in autumn, which will help them to resist the winter's frost, and this will be dug in in the spring; a second mulching of long manure in summer, if the weather be dry and hot, will be beneficial. Many of the vigorous-growing Roses amongst the summer Roses—the Hybrid Perpetuals and Noisettes—may be pegged down to advantage, and be thus made to cover more ground and give a finer display of flowers.

Waltham Cross.

A. W. PAUL.

INSECTS HURTFUL OR USEFUL TO THE ROSE.

THE GARDEN ANT.—The garden ant, which belongs to the Order Hymenoptera, does great mischief to Rose trees either by forming ant-hills at the foot of the plant, or by constantly walking backwards and forwards on the branches and young shoots. Their presence is always a sure sign that aphides or kermes are not far off; by destroying these insects we put an end to the visits of the ants. We may, however, attack them in a more direct manner. If we place amongst the branches of the Rose tree several small vials half filled with water mixed with honey or sugar, the ants, being attracted by the mixture, will fall into the liquid and be drowned. To destroy an ant-hill at the foot of a Rose tree, we must turn up the soil and sprinkle it with flour of sulphur. If the ant-hill is at a distance from the Rose trees it must be laid bare, and a number of little conical packets of flour of sulphur placed in the middle and lighted. As soon as they have half burnt away the soil is returned to its place. The ants are destroyed by the sulphurous acid penetrating the soil, which also prevents any of those which are outside from returning to carry off the larvae. Ant-hills may also be destroyed by watering them with boiling water.

THE ROSE SAWFLY.—The Rose sawfly (*Hylotoma Roseæ*) is an insect which Rose growers know too well by the mischief they do to the young shoots. The characteristics of the Rose sawfly are a yellow head, in the form of an elongated square, bright whitish eyes, club-shaped antennæ smooth and without joints, and four transparent wings with thick nerves. The two upper wings are placed close to the breast, the two under ones a little lower down. The six feet are marked with round black spots. The abdomen is of an orange-yellow, and is composed of nine rings. The lower extremity of the abdomen is split in the under portion, allowing the saw to be thrust in and out. This saw, which is formed of a horny substance, is flat, and measures 0.4th of an in. in length, by 0.16th of an in. in width. The Rose sawfly makes its appearance from the 15th of July to the end of August, at which period it lays its eggs. It has a heavy flight, and is easily caught, especially when it is at work on a young shoot. When about to lay its eggs it fixes itself against the rind of a young shoot, with its head bent downwards, and by means of its saw it cuts into the rind and deposits an egg. It then moves a little lower and begins again, raising between each egg a kind of partition made out of the fibres of the bark. It leaves in each shoot on an average about twenty eggs, although in some cases we have observed as many as fifty. These eggs are placed at a distance of 1.16th of an in. apart, and contain a young larva. At the end of about ten days the larva becomes visible under the shell, and may be readily distinguished by its black head and eyes, and its six little feet marked with black spots. When first laid these eggs are 0.04 of an in. in diameter, but at the twentieth day they will have increased to 0.06 of an in. They now become of a slightly dull yellowish colour and the young larva is hatched shortly after. Each of the flies lays a batch of eggs in two and sometimes in four of the young shoots before taking its departure. Like most other insects, its purpose in life having been accomplished, it dies almost immediately, its dead body being frequently found exactly under the spot where it had laid its last batch of eggs, as we have frequently observed for several years past. It is always on Rose trees in full bearing that this fly prefers to fix itself, and, by an admirable display of instinct, lays its eggs an inch or two from the top of the young shoots, so that its progeny may have soft and tender leaves to feed upon. In addition to this, we have noticed that the sawfly gives a transverse saw cut to the rind of the shoot, just below where its eggs are laid, so that they may not be covered over with the ascending sap. We may easily detect the presence of the Rose sawfly by noticing the curved form attained by the shoots in whose rind the eggs have been deposited, or after some five or six days, by the rind having turned black, without the growth of the shoot having been interfered with. The eggs are hatched about the twentieth or twenty-fifth day, and the young larvae continue to be produced for three days afterwards. At the time of hatching they measure 0.12 of an

inch long, and are of a dull white colour, especially on the body. The shell or cocoon of this egg remains in the incision of the rind. The young larvæ soon spread themselves over the young leaves of their native shoots, which they attack at the edges, leaving nothing behind but the veins. At the end of a few days, the different parts of the body begin to assume their natural colour, the head becomes black in company with the six feet, and the skin of the body is marked with small black spots. They increase in size at the rate of 0.2 of an inch in nine days. After the twentieth day the larvæ measure a little more than $\frac{1}{4}$ in. by 0.06 of an inch in diameter. The head becomes yellow with two black eyes. The mandibles turn brown, and the three pair of feet of a pinkish-white, as well as the false feet and the under side of the abdomen. The skin of the back, which is of a beautiful green colour, is marked longitudinally with yellow and black spots. The false feet are provided with a number of silky tufts. About this stage the larvæ remove to a lower portion, where they find more substantial food in the mature leaves of the Rose tree. As soon as the larvæ have reached two-thirds their natural size they cast their skins, and assume a much brighter colour. Taking advantage of the night dews, which soak through their skin and soften it, they begin to cast off their exuvia, beginning with the head, and by repeated wriggings and drawing themselves backwards and forwards, they gradually slide the old skin from ring to ring, finally casting it off when it reaches the extremity of the abdomen. At this period the larva appears of an even colour, that is to say, the different parts of the body appear to have left their proper colours in the skin which has been cast off by the insect, but in about a couple of hours the light acts on the skin in some peculiar way, and, as if by enchantment, the colours come out more brilliantly than ever. This change generally takes place at sunrise. At the end of about thirty days the larva reaches its full size, its length being nearly $\frac{1}{2}$ in., and its diameter a little more than 1-10th in. It now drops to the ground by a thread which it secretes itself, and penetrates the soil to the depth of from 1-3rd in. to $\frac{1}{2}$ in. It now spins a kind of cocoon with very close meshes, so as to protect the coming chrysalis from the damp. This cocoon, which is about $\frac{1}{2}$ in. long by $\frac{1}{4}$ in. thick, is of a yellowish-grey colour, with irregular, round meshes, and crossed by extremely fine fibres. If this first envelope is not sufficient, the larva constructs another with much finer threads outside the first one. We have torn asunder one of these cocoons, which are very strong in their texture, and we have found the larva inside curled round with its head and tail together. We have also noticed that one-third of the length of this cocoon is empty, so that there may be room for the chrysalis to change into the perfect insect, as well as for the larva to be able to move about while engaged upon its work. As soon as the Rose sawfly has finished its cocoon it is slowly transformed into a chrysalis, which, at the proper season, gives birth to the perfect fly, which appears in May or June, and gives rise to a new generation, as has already been described. These flies are very easily caught when they first appear, when large quantities of them may be destroyed. The most rational mode, however, of getting rid of them is to cut off the bush shoots upon which the eggs have been laid and burn them immediately.

THE COCKCHAFER AND ITS GRUB (MELOLONTIA VULGARIS—Fabr.).—The perfect cockchafer is familiar to every one, but few know the extent of the ravages committed by the larvæ of this insect generally known as the white worm. It lives in the earth for three years, and during that time it is calculated that in France alone it destroys crops of various kinds of the value of £40,000,000 sterling. Other varieties of the common cockchafer, such as *Melolontha hippocastane*, *albida*, *equinoxialis*, *solsialis*, and *estiva*, are also very destructive in certain localities. At Ivy, near Paris, in 1864, the Grass plots and lawns of that locality were almost entirely destroyed by a white grub of a much smaller size than that of the common cockchafer; 150 of these grubs were gathered in a single square yard. Great attention ought, therefore, to be paid to lawns and Grass plots in the vicinity of Rose plantations, so as to keep them free from their destructive larvæ. They generally make their appearance towards flowering time, and never before the leaves have well advanced towards maturity. They do not appear all at once; the accidents of locality and temperature will advance or retard the transformation of the grub into the perfect insect, so that there may be an interval of as much as a month between the appearance of the first and last batch. If the weather turns cold after the first comers have made their appearance they will return to the galleries which they have dug for themselves, or else they will dig new ones if the old ones have become filled up. No sooner has the cockchafer unfolded its wings for the first time than it alights on the leaves of the trees upon which it feeds. At the dawn of day, and during the early part of the night, and often in the middle of the day, when the sky is overcast, this insect may be seen flying backwards and forwards. Its flight is heavy,

irregular, and undecided, and it rushes blindly against any objects that may be in its way, falling heavily to the ground, from which it soon rises into the air once more and resumes its flight until it is again knocked down. It begins to breed at about the end of April or the beginning of May. The cockchafers which begin breeding so early are those which have lain dormant all the winter, owing to their having undergone a later transformation either from cold or some other retarding cause. We often see females of the former year flying about as late as the end of June. The male cockchafer, it may be mentioned, is a polygamist. The female when laying time approaches drops to the ground in the neighbourhood of some plants, the roots of which will furnish succulent food for the young larvæ. Once in the ground the female digs a hole, 3 in. to 6 in. deep, at the bottom of which she deposits some seven or eight eggs. During the day she leaves the hole in search of food, and lays a fresh batch of eggs in another hole a few days after the first, frequently on the top of her latest-laid eggs. On an average the female cockchafer lays from sixteen to twenty eggs, which are suspended in groups of seven or eight, which may be found during July at the foot of the Strawberry and other plants. The egg of the cockchafer is white, of a regular oval form, and is about 1-10th of an in. in length. The larvæ are hatched about fifty days after the eggs are laid, that is to say, about the beginning of July. When fresh from the egg the larva is about 0.2 of an in. long, and 0.04 of an in. in diameter. In colour it is of a dirty white, the head and feet being of a pale bright yellow. The mandibles, which even at this early stage are sufficiently formidable, are black. At the end of a fortnight it has grown to nearly twice the size, and the intestines filled with blackish matter become visible. When first hatched the larva feeds on the roots which are nearest to its birthplace. These larvæ live together in groups until the month of September, at which period they separate, except when congregated round several vigorous plants. In October and November, according as the weather is more or less cold, the grub of the cockchafer buries itself in a gallery, the depth of which varies from 1 ft. 6 in. to 3 ft., and establishes his winter quarters under the roots of the trees or plants which he intends to feed on during the cold weather. In the month of September we counted sixty cockchafer grubs in the hollow stem of a dead Cherry tree. When it returns to the earth for the winter it measures $\frac{1}{2}$ in. in length, and 2-10ths of an in. in diameter. Every winter the cockchafer grub casts its skin. When the spring arrives the grub, guided by the increased temperature, comes to the surface, and prepares for ravaging the plants in the neighbourhood on a large scale. During this stage of its existence its growth is very rapid. When eleven months old it is $\frac{1}{2}$ in. in length, and 1-5th of an inch in diameter; a month afterwards it has increased to $\frac{1}{2}$ in. long and $\frac{1}{4}$ in. in diameter. The maximum development is reached in eighteen months, when it measures 2 in. in length and $\frac{1}{2}$ in. in thickness, the body being now covered all over with short reddish-brown hairs. For three years it carries on its ravages, the winter's cold obliging it to bury itself in the earth until the time comes for it to be transformed into the perfect insect. The larva of the cockchafer, like those of other insects, possesses but few faculties, except that of devouring everything within its reach, and of being very tenacious of life. The cockchafer grub does not walk, in the true sense of the term; it advances like an earthworm, by the alternate expansion and contraction of the rings of its body. When it digs its gallery it doubles on itself, the hinder portion serving as a support, while the head is thrust forwards. The mandibles break up the earth and the feet push it on one side, the body revolving on its axis, so to speak, at the same time, pressing and smoothing the sides of the hole. A vigorous grub will in this way dig a hole $\frac{1}{2}$ ft. deep in about an hour. When the grub begins to look out for food, the galleries are either horizontal or only gently sloping, but when it buries itself in the earth in order to take up its winter quarters or to undergo the change from grub to beetle, it digs a well or gallery that is nearly vertical; sometimes, however, it is formed of several broken lines, at others in gentle curves. It is at the bottom of these vertical holes that the shells or capsules in which the metamorphosis takes place are found. This change takes place in the course of the winter, the larva changing into the perfect insect by casting off its outer skin, which it leaves behind it at the bottom of the capsule. We may at times meet with cockchafers under the soil in January and February in a very advanced stage of transformation. The cockchafer grub is not dainty in the choice of its food; it feeds on all kinds of food alike, although there are some which it prefers to others, such as those of the Strawberry plant and Rose tree, but they may be also met with amongst the roots of the Dandelion, Leek, Parsley, Sorrel, salads, Grass, Lucerne, and at the base of young Cedars. When these plants, therefore, are grown in the neighbourhood of Rose trees they should be frequently examined to see if they are infested with these pests. It is consequently, on account of its preference for certain plants, that Rose growers plant or sow Cos and other Lettuces in the neighbourhood of

their Rose trees, in order to attract the cockchafer grub to the surface of the soil. Its presence may easily be detected by the withered appearance of the Lettuces. As far as insect-destroying manures go, I have, after many experiments, extending over several years, become convinced of their inefficacy, or rather of their utter uselessness. The larva of the cockchafer is possessed of a remarkable amount of vitality. Immersed for a full fortnight in water, it still lives, and after having buried it in dry earth for a whole month, I have found it alive and well at the end of that time. I have even plunged it into a strong solution of sulphate of copper (blue copperas) without hurting it. It also resists the action of a solution of carbonate of soda, which is so destructive to other forms of animal life. Even with fish manure, mixed with carbonate of soda, it escaped all injury, after having been submitted to its action for more than a month. Nothing in the ordinary way, except excess of heat or cold, will destroy it. For instance, if the thermometer sinks to only a couple of degrees beyond the proper point, the animal dies just as it does if it is submitted to the action of sunlight for only a quarter of an hour. We must come back, therefore, to our first advice, which is to attack the larvæ during the first year while they are still young and gathered together in groups. The most certain way, however, of destroying them effectually is to pick them off the plants in the morning and the daytime when they are half asleep. They should be thrown into tubs of lime-water, either alone or mixed with one-tenth of common petroleum or paraffin oil. They soon become suffocated in this mixture, after which they are burnt or buried.

USEFUL INSECTS.—If certain insects are the decided enemies of the Rose grower, there are others which are his friends, and which should be cherished as such. Amongst these we may count the coccinellas, or garden beetles, which are strongly carnivorous, the bearded Rose beetle, the large black carabus, which is a frequenter of Box borders and the bases of walls, the coccinella, or lady bird, the larvæ of which devour the Rose aphid at the rate of fifty per head every day; they are generally found on the leaves of the Lime tree; the ichneumon, which destroys the larvæ of the lepidoptera and the aphid, and lastly, the churchyard or burying beetle. A dead mole, which was thrown on the path of one of our Rose gardens, was attacked by a couple of these insects, and a reinforcement of three other burying beetles came to the assistance of their friends. The next day there was no longer any trace of the mole in the pathway, but, at 2 ft. from the spot where the body had lain, at the edge of a border, I noticed a small heap of earth; it was the mole. The burying beetles, finding the soil of the pathway rather too hard for their jaws, they had transported their prey to a softer locality, and had buried it there, and, after having stripped it of its skin, were making preparations for laying their eggs in the dead body, wherein would breed a progeny of young larvæ, with their natural food ready to hand. The ordinary frog and the hated toad are also among the Rose grower's most faithful allies, seeing that they make great havoc amongst worms and young slugs. Owls and bats, too, feed upon nocturnal insects, and the little birds, which make a garden pleasant with their sweet harmonies, pay for the slight amount of damage they do by doing their best to relieve us of all kinds of insects, whether useful or injurious.

THE SYRPHUS FLY.—The *Syrphus Pinastri* belongs to the Diptera, and deserves to be particularly mentioned amongst useful insects. Its larvæ feed upon the Rose aphid, and it is generally about the middle of April, as soon as the larvæ of the aphid first begin to make their appearance, that we may see this fly, which has some resemblance to a small gnat, poisoning itself over the young twigs which are covered with aphides. The vibration of its wings is so excessively rapid, that the eye can scarcely perceive their motion; at other times it may be seen resting itself on a leaf, from which it disappears at the slightest sound. This fly measures 4-10ths of an inch in length and 2-10ths of an inch in diameter, and is provided with six feet, two of which are inserted in the neck and the remaining four in the base of the thorax; they are black at the upper part of the thighs, and yellow in the middle, each being composed of five joints. The head is very large, with a flat white space in the middle, upon which may be noticed two antennæ, in the form of clubs, of a brownish-black hue, with two little filaments attached. The thorax is black, as well as the back, which are marked with three white bands, which grow smaller as they extend towards the base of the abdomen. The belly is flat, and is marked with four white transverse bands and two longitudinal streaks placed on the sides. The wings are very transparent, and are of the same length as the body. The female, with instinctive foresight, lays her eggs on the Rose leaves which are most likely to afford a good crop of aphides. It lays about the beginning of April, and continues laying at intervals until the end of September. Each female lays from eighteen to twenty eggs in two or three days. The eggs are as white as snow, and are of an ovoid shape; they measure 1-25th of an inch in length, by 1-50th of an inch in diameter, and

are glued to the edge of the leaf by the female by means of a glutinous substance which exudes from her body. When the larvæ issues from the egg the skin is of a dead white marked with a number of brown striae at the lower part of the back. It is $\frac{1}{8}$ in length and 1-25th of an inch in diameter at its birth, and it is only as it grows older that the skin takes its proper colour. When the larvæ arrives at maturity it is of a bright green hue, a divisional line of yellow running along the middle of the back, which is marked with black dots on each side of the line. The head is elongated, in the form of a trumpet, allowing a kind of black dart to be seen under the transparent skin. This dart is divided in two and serves to dismember the larvæ of the aphid on which it feeds. Seven pairs of processes indicate where the feet ought to be. It moves about with great difficulty, fixing itself by its head, curving its body and dragging it after it until it joins the heel, which is again advanced and held firm as before. The larvæ has also the power of standing up, so to speak, on its hinder part, stretching out its body in search of aphides, which it pierces with its dart, holding it up in the air, and, sucking the juices out of its body, it throws away the empty skin and moves off in search of other prey. Its gluttony is so great, that we have seen it suck the interior out of six aphides in less than seven minutes. A single aphid we have seen devoured in eighty seconds; and when once it is gorged it fixes itself on the edge of a leaf to digest its meal, the rest of the aphides actually crawling over its body without being in any way molested. From the time it is hatched to the time it assumes the form of a perfect fly is generally about thirty days. When fully grown it is 3-5ths in. in length and about 1-10th in. in diameter. Before transformation it fixes itself by the head to the edges of a leaf by a silken thread; the body becomes shorter, and grows rounder towards the base; the skin turns of a bronzy hue; and the yellow band which divided the body in two disappears. The seven pairs of false legs are surrounded by the skin of the body, the whole forming a little cocoon, rounded at the base, and slightly pointed towards the summit, measuring $\frac{1}{8}$ in. in length by 1-12th in. in diameter. This cocoon sometimes turns to a bronze colour as the time for the ultimate change approaches; others, on the contrary, are smaller and preserve a dead white hue. It is possible that these smaller ones produce male flies, as they are fewer in number than the smaller ones. After twenty-four or thirty days the insect breaks the envelope of the cocoon, and takes flight in search of its male or female mate. Thus the larvæ of the last crop of eggs gives birth to those flies which pass the winter in the midst of decayed leaves and other shelters, seeking their fortunes as soon as the temperature will allow them to fly about, which is generally about the end of March or beginning of April. J. LACHAUME.

ANSWERS TO CORRESPONDENTS.

Autumn-flowering Herbaceous Plants.—Would you kindly give me the names of say three dozen of the best hardy herbaceous plants that would bloom in July and August, plants such as Delphiniums, to have a few of the best varieties named?—A.

<i>Alstroemeria aurantiaca</i>	<i>Geum coccineum</i> fl.-pl.	<i>Penstemon Hartwegii</i>
<i>Asclepias tuberosa</i>	<i>Hemerocallis fulva</i>	<i>Penstemon gentianoides</i>
<i>Aconitum Napellus</i>	<i>Lobelia cardinalis</i>	<i>Penstemon Jaffrayanus</i>
<i>Achillea Ptarmica</i> fl.-pl.	<i>Lobelia fulgens</i>	<i>Penstemon azureus</i>
<i>Betonica grandiflora</i>	<i>Linaria dalmanica</i>	<i>Penstemon heterophyllus</i>
<i>Coreopsis lanceolata</i>	<i>Lilium auratum</i>	<i>Platycodon grandiflorus</i>
<i>Campanula medium</i>	<i>Lilium speciosum</i>	<i>Rudbeckia speciosa</i>
<i>Chelone Lyoni</i>	<i>Monarda didyma</i>	<i>Spiraea palmata</i>
<i>Delphinium obliqua</i>	<i>Monarda fistulosa</i> and	<i>Spiraea vauclensis</i>
<i>Delphinium Keteleeri</i>	vars.	<i>Scutellaria perfoliata</i>
<i>Delphinium Belladonna</i>	<i>Nepeta macrantha</i>	<i>Tritoma Uvaria</i>
<i>Eryngium amethystinum</i>	<i>Oenothera fruticosa</i>	<i>Veronica virginica</i>
<i>Gentiana asclepiadea</i>	<i>Oenothera riparia</i>	<i>Veronica longifolia</i>
<i>Gentiana asclepiadea alba</i>	<i>Phlox decussata</i> in variety	<i>Zauschneria californica</i>

Vicomtesse Hericart de Thury Strawberry.—Not being sure as to having the true variety of this, and wishing much to get up a good stock of the right kind for forcing, I should be glad if some of your correspondents will kindly state what are its distinguishing features. Those I have retain the petals till the fruit is far advanced, and to one's thinking would turn out indifferent settlers, as the anthers appear bare of pollen and are not pushed out well over the fruit.—S. [If the variety which you have does not set most freely and bear enormously, you certainly are not in possession of the true sort, as these are its special characteristics. Under ordinary culture the berries are of medium size, of flattish, conical form, and deep red; the flesh being also deeply tinged with red, very solid, and of a rich, brisk flavour. The foliage, which is very glossy, is light green, and so hardy that the late severe winter has damaged it but little. It is synonymous with Garibaldi, a most excellent Strawberry for any purpose.—W. W.]

Castleya Flowers without Sheaths.—Two of my young plants of *Castleya Trianae* have produced flowers without sheaths, the bud springing direct from the top of the bulb. Is not this very unusual? and how can I prevent it for the future? The plants seem healthy, and have produced flowers with sheaths at the same time. Those without sheaths were large and well coloured, but flabby, and fell down the day after expanding.—A. A. THORN.
[Without seeing the plants alluded to, or having any idea as to the temperature and mode of culture to which the plants have been subjected, it is next to impossible to say why your plants have produced flowers without sheaths, and especially as they have at the same time borne flowers with sheaths in the

SOCIETIES AND EXHIBITIONS.

ROYAL BOTANIC SOCIETY.

MAY 21.

THE first summer exhibition of this society was held last Wednesday, and, notwithstanding that some of the classes were but scantily represented, the tent was well filled. The absence of Pelargoniums and pot Roses, except in one class, was conspicuous, as on previous occasions they formed such an attractive feature. The Roses from the Waltham Cross and Cheshunt Nurseries (not shown for competition) were, however, particularly noteworthy, and added greatly to the attractiveness of the exhibition. Messrs. E. G. Henderson and Sons, St. John's Wood, exhibited a very effective bank of well arranged plants, consisting of Palms, Orchids, Ferns, &c. Besides the novelties certificated were noticeable *Coburgia luteo-viridis*, the beautiful *Bertolonia Miranda*, *Amaryllis Harleyana*, and many others; also a fine batch of *Anacochili* in good condition. Messrs. Veitch and Sons furnished a small, but excellent group of new and rare plants, many of which obtained certificates. *Ranunculus Lyalli* was again shown in flower, but not so fine as hitherto. Some flowering specimens of the new hybrid *Cypripediums* were shown, viz., *C. calanthum*, and *C. superciliale*, both distinct kinds. From Mr. Bull came a numerous collection of new and rare plants, several of which were certificated; also a tastefully arranged group of Orchids, Ferns, Palms, and other plants. Mr. B. S. Williams sent a large and rich collection, containing many plants of interest, which were much admired, and several of the new kinds received certificates of merit. From Messrs. John Laing & Co., Forest Hill, came a small but tastefully-arranged group of fine-foliaged plants intermixed with *Azaleas*, *Gloxinias*, and *Begonias*, of which some were certificated. Similar groups also came from Messrs. Hooper & Co., Messrs. Osborn & Son, and Mr. G. Wheeler. Mr. H. Boller, Kensal New Town, exhibited a small collection of Cacti, including large specimens and many in miniature pots. A magnificent display of *Clematis* came from Messrs. Jackman & Son, Woking Nursery. These were shown in pots gracefully trained on balloon-shaped trellises, and were splendid examples of high-class culture, all being very finely bloomed. Those with the light-coloured flowers were Fair Rosamond, Mrs. S. C. Baker, Maiden's Blush, Miss Bateman, and Vesta. The best of the dark purple kinds in various shades were Sir Garnet Wolseley, Lord Lonsborough, Lord Mayo, Albert Victor, Lord Derby, Aureliana; all the above being varieties of sterling merit and highly desirable. An effective group of Pelargoniums, intermixed with the fine new *Victoria Lily* of the Valley, was sent by Messrs. Hawkins and Bennett, Twickenham, and were much admired. Mr. George, Putney Heath, exhibited cut blooms of new varieties of *Abutilons*, which were very fine. From Messrs. E. G. Henderson & Sons came cut blooms of a very fine strain of *Mimulus* in excellent condition.

Botanical Certificates were awarded to—

Cypripedium, species from Java (Veitch).—A very distinct novelty, with flowers as large as those of *C. villosum*, the upper sepal being green with creamy-white margins, the lateral sepals being rich brown and spotted at the edges, and the lip of a paler hue, the whole flower having a very glossy appearance.

Cypripedium Boxalli (Bull).—A species in the way of *C. villosum*, but very distinct.

Sarracenia atro-sanguinea (Bull).—A handsome new variety, similar to *S. rubra* in habit and form of pitchers, but, in addition to the red network of veins, with the upper half of the lid of the pitcher of a deep blood-red colour.

Tillandsia zebrina major (Veitch).—A variety with an unusually large spike of scarlet bracts and yellow blossoms.

Phædranassa chloracea vera (Henderson).—A beautiful bulbous plant, with long, tubular flowers of a deep flesh colour, tipped with dark green, the blossoms hanging gracefully in umbels from stout, glaucous stems about 2 ft. high.

Tulipa stellata (Bull).—A beautiful early-flowering Himalaya Tulip, allied to the old *T. Clusiana*, but with the blossoms whiter.

Spiræa nivosa (Bull).—A very pretty and graceful novelty, similar in appearance to *Astilbe japonica*, but with broader foliage, denser flower-heads of snowy whiteness.

Nephrolepis pluma (Veitch).—An elegant kind with long pinnae and gracefully arching fronds.

Asplenium horridum (Williams).—A distinct Fern with broad fronds, the stripes of which are covered with a fulvous, downy substance.

Polypodium Kremeri (Veitch).—A very elegant novelty, of dwarf growth, reminding one of *P. Dryopteris*.

Todea plumosa (Veitch).—A charming new Filmy Fern in the way of *T. superba*, but more transparent, of a pale green.

Pteris cretica hybrida gigantea (Henderson).—A very robust and highly ornamental variety of this favourite Fern, growing over 3 ft. high.

Doodia aspera var. *multifida* (Veitch).—A pretty variety, with the tips of the fronds divided into numerous segments.

Cupania elegantissima (Williams).—A decorative plant of graceful habit, with pinnate leaves resembling some of the Cycads.

Croton Burtoni (Williams).—An elegant variety, with long drooping leaves, having undulated margins, and prettily mottled with yellow and green.

Croton Evansianum (Bull).—A variety with an erect habit, the leaves of which have a tendency to be trilobed, and all of them are more or less richly coloured.

Croton Dormanianum (Bull).—A distinct form with ovate leaves, also finely variegated.

Asparagus gracillimus (Bull).—A graceful climber, with slender stems, and small rich green foliage.

Zamia obliqua (Bull).—A handsome Cycad, with bold leaves and broad glossy oblique leaflets.

Cypophentia macrocarpa (Bull).—A noble-looking Palm, with bold pinnate leaves, which, when young, assume a rich purplish-red tint.

Cycas siamensis (Bull).—A novelty in the way of *C. circinalis*.

Cycas pluma (Bull).—Also an elegant plant, with arching foliage.

Catekidozamia Miqueliana (Bull).—A species of graceful, yet bold habit.

Dracæna Laingi (Veitch).—A very ornamental and distinct variety, with prettily variegated foliage, which droops gracefully.

Erythrina marmorata (Veitch).—A very desirable novelty, having its leaves beautifully mottled with various shades of green and white.

Cattleya Skinneri alba (Bull).—A charming white-flowered variety of this fine Orchid.

Ranunculus Lyalli (Veitch).—A handsome New Zealand plant, described and figured in our columns last week.

Oncidium tetracopis (Bull).—A handsome novelty in the way of *O. crispum*.

Encephalartos Hildebrandi (Bull).—A decorative Cycad, of graceful habit.

Floricultural Certificates were awarded to—

Rhododendron Duchess of Teck (Veitch).—A beautiful variety of the tubular-flowered greenhouse section, bearing large clusters of blossom, of a delicate orange tint, suffused with pink.

Begonia Comtesse H. de Choiseul (Laing).—A desirable novelty, with perfectly double flowers of good form, and of a delicate bluish tint.

Begonia Marie Bouchet (Laing).—Another double-flowered variety, with beautiful rosette-like blossoms, of a rich crimson colour.

Begonia J. H. Laing (Laing).—A brilliant scarlet-coloured variety, with single flowers, of a large and very fine form.

Begonia Jaubrey Clark (Laing).—Also a desirable acquisition, with bright scarlet blossoms and handsome foliage.

Begonia Zulu (Hooper).—A beautiful variety, of robust habit, having elegant foliage and brilliant scarlet flowers.

Caladium L'Albans (Osborn).—A novelty with very beautiful foliage, the ground colour being transparent white suffused with pink, and distinctly veined with green.

Azalea mollis Comte de Gomer (Veitch).—A beautiful variety, with large, deep, rosy-pink blossoms.

A. mollis Baron Constant Rebecque (Veitch).—Similar to the foregoing, but with flowers of a rich yellow colour.

A. pontica Graf Von Moran (Veitch).—A very pretty and free-flowering variety, much resembling the singular form *A. narcissiflora*, but with the flowers of a deep bluish tint.

Gloxinia Duke of Connaught (Veitch).—A beautiful variety of the erect flowered type, with large white-edged blossoms of a rich purplish-crimson colour.

“Coleus Empress of Germany (Bull).—A superb variety, with the leaves of a bright reddish tint, having a slight edging of gold.

Coleus Starlight (Bull).—Another very beautiful form, having wavy-edged leaves of a deep rosy hue, margined in yellow.

Coleus Harlequin (Bull).—A handsome variety, with the foliage very grotesquely marked with various tints, quite distinct from any which we have seen.

Coleus Butterfly (Bull).—Also a very desirable kind, having leaves deeply toothed, of a violet-rose tint, edged with pale yellow.

Pansy Champion (Hooper).—A pretty variety, of good form.

Mr. Boller, of Kensal Town, received certificates for *Mamillaria filifera*, *M. formosa*, and *Echinocactus myriostigma*, all interesting Cactaceous plants.

Miscellaneous Plants.—The class for twelve stove and greenhouse plants (nurserymen) was but poorly represented, there being but one entry, and that from Messrs. Jackson & Son, Kingston, who showed a good collection, the best plants in which were *Imanophyllum miniatum*, with over a dozen large heads of flowers; *Hedera tulipifera*, *Rhododendron Countess of Haddington*, large and finely flowered; *Erica depressa*, *Boronia pinnata*, *Aphelexis macrantha rosea*, and others, all fine examples. In groups of ten plants (amateurs), Mr. Chapman, gardener to J. Spode, Esq., Rugely, was first. He had *Erica Cavendishi* 4 ft. through and well flowered; *Dracophyllum gracile*, a superb example, as was also *Statice profusa*. *Ixora coccinea* was staged in splendid condition; also *I. Prince of Orange*. *Azalea Mars*, *Chorozema Chandleri*, *Hedera tulipifera*, and the sweet-scented *Erica odora rosea* were all fine examples of high-class culture. The second prize went to Mr. G. Wheeler, gardener to Lady Louisa Goldsmid, Regent's Park, whose specimens, though somewhat small, comprised some well-bloomed examples, the best being a large plant of *Erica affinis* and a fair-sized specimen of the pretty *Aotus gracillima*. The class for six stove and greenhouse plants brought out three entries, the first prize being awarded to Mr. Chapman, who had a remarkably even group containing splendid examples of *Erica depressa*, *Tremandra ericifolia*, *Dracophyllum gracile*, *Acerophyllum venosum*, *Ixora Prince of Orange*, and *Anthurium Scherzerianum*. The second prize went to Mr. J. Child, gardener to Mrs. Torr, Garbrand Hall, Ewell, whose best plants were *Azalea Iveryana*, *Aphelexis macrantha purpurea*, *Hedera tulipifera*, and *Erica depressa*. Mr. G. Wheeler was awarded the third prize for a small but well-flowered group. In the nurserymen's class for six, Messrs. Jackson & Son were the only exhibitors, with finely-grown plants of *Hedera fuchsoides*, *Boronia serrulata*, *Aphelexis macrantha purpurea*, and others.

Orchids.—These formed a prominent and very beautiful feature, and though the entries were not numerous, some capital groups were shown. In the amateurs' class for twelve plants, Mr. Douglas, gardener to F. Whitbourn, Esq., Loxford Hall, Ilford, staged a splendid lot for the first prize, the most noticeable being a grand plant of *Dendrobium nobile*, over 3 ft. high and as much through; *Cattleya Warneri*, a magnificent variety; *Cypripedium villosum*, with two dozen flowers; *Masdevallia Harryana*, a deep-coloured variety with eighteen blossoms; *Odontoglossum Roezeli* and variety *album*, *O. vexillarium*, and *O. Phalaenopsis*, all superb plants. An admirable collection was also shown by Mr. Heims, gardener to F. Philbrick, Esq., Avenue Road, Regent's Park. The best of these were a grand plant of *Cattleya Skinneri*, very rich-coloured form, *Lelia purpurata*, *Cattleya Mendelli*, *Dendrobium thysiflorum*, *Maxillaria Turneri*, and others, all in fine condition. In the nurserymen's class for twelve Orchids Mr. B. S. Williams was awarded the first prize for a group consisting of the lovely *Dendrobium Parishii*, a fine plant; *Vanda swartzii*, with four large racemes; *Lelia purpurata*; the gorgeous *Cattleya Mendelli*; *Masdevallia ignea*, a pale-flowered form, but finely bloomed; the novel *Cypripedium Swianum*; *Masdevallia Lindeni*, with over two dozen highly-coloured blossoms, and others. Mr. Henry James, Castle Nursery, Lower Norwood, also competed, and was deservedly awarded the second prize, his plants showing superior cultivation and rich variety. The most noteworthy were *Dendrobium Wardianum*, a fine example of this lovely Orchid; *D. nobile*, a grand plant; *Oncidium oncolor*, *O. crispum grandiflorum*, *O. Marshallianum*, and *O. sarcodeum* were also well flowered; also *Dendrobium thysiflorum* and *Cattleya Mendelli*. Messrs. Jackson & Son were awarded third prize in the same class.

Roses.—The classes for Roses in pots were but scantily filled, a fact doubtless owing to the backwardness of the seasons, though the Messrs. Turner, of Slough, made a very effective display in the class for twenty plants in 8-in. pots. Amongst these the best flowered were—*Perfection de Montplaisir*, a Tea-scented variety, of a fine canary-yellow; *Duchesse de Vallombrosa*, flesh colour, shaded with

rose; *Souvenir d'un Ami*, Jean Liabaud, Mademoiselle Thérèse Levet, Captain Christy, Royal Standard, Princess Beatrice; all also very fine. The Cheshunt and Waltham Cross Nurseries contributed superb collections of cut blooms, not for competition. These were deservedly much admired, as they included some exquisite examples. Amongst those from Messrs. Paul & Son were splendid trays of Tea-scented varieties, such as *Maréchal Niel*, *Céline Forestier*, the lovely Cheshunt Hybrid, *Belle Lyonnaise*, and others. From the Waltham Cross Nurseries came a very fine group, including the finest of the Hybrid Perpetuals, Tea-scented, and other kinds in capital condition; also a well-filled tray of a Banksian Rose, named *Rosa Banksia odoratissima*, a very sweet-scented variety, with pale sulphur-yellow double small blossoms in large clusters.

Azaleas.—These, as is usual in May, formed a very prominent feature of the show, and the classes into which they were divided were numerous and well filled. For six for competition amongst amateurs the first prize came from Mr. A. Ratty, gardener to R. Thornton, Esq., The Hoe, Sydenham, who staged a first-rate group; indeed, as fine as we have yet seen. It comprised *Georgiana*, a gigantic pyramid of blossoms of a deep orange-scarlet; *Criterion*, *Exquisite*, *Distinction*, in various shades of pink; *Model* and *Eulalie Van Geert*, all admirably grown and effectively staged. Mr. G. Wheeler exhibited a collection of smaller-sized plants for the second prize, several of which were remarkably well bloomed, and judiciously selected as regards variety. An extra prize was awarded to Mr. J. Child, gardener to Mrs. Torr, Garbrand Hall, Ewell, for six plants of small size. In the nurserymen's class for six, Mr. Turner and Mr. Williams competed, and took first and second prizes respectively. The former group consisted of fair-sized and well-bloomed plants, some with very large flowers, such as *Duc de Nassau*, *Duchesse de Nassau*, and *Reine des Fleurs*. For twelve plants in 12-in. pots, Mr. Ratty was again first with capital examples, his best being *Stella*, *Juliana*, and *Model*; the other competitor was Mr. Turner, who had a very even group. In the class for six in 12-in. pots for amateurs, Messrs. Ratty, Child, and Wheeler were the competitors.

Heaths were but second-rate, and the entries few. Messrs. Jackson secured the first prize for twelve in the nurserymen's class; the second prize went to Messrs. Peed & Son, Norbury Vineyard Nurseries, Lower Streatham. The class for six only brought out one exhibitor, Mr. G. Wheeler, to whom the second prize was awarded for a somewhat uneven collection.

Ferns.—In the amateurs' class for six exotic Ferns, Mr. Douglas took the first prize with a good group, the most noticeable plants in which were *Adiantum concinnum latum*, *Gleichenia Splenacea*, and *Davallia polyantha*. Mr. Wheeler took the second with an evenly-grown group, comprising *Adiantum tenerum* and *Alsophila excelsa*. The nurserymen's class was represented by only one collection, which came from Mr. Williams, and consisted of a grand mass of *Adiantum Farleyense*, *Davallia Mooreana*, *Gleichenia Splenacea*, and *G. rupestris*.

Fine-foliaged Plants.—These were shown in splendid condition. Amongst the amateurs, Mr. C. Rann, gardener to J. Warren, Esq., Handcross Park, Sussex, staged a grand collection for the first prize, consisting of superb examples of *Croton interruptum*, *C. variegatum*, *Zamia Lehmanni*, *Cycas revoluta*, *Areca sapida*, and *Latania borbonica*. The second prize went to Mr. Ford, gardener to J. G. Meegan, Esq., Windermere House, Norwood, whose plants included some magnificent specimens, especially a gigantic *Diefenbachia picta* of a size rarely seen; also *Alocasia metallica* in first-rate condition. For the third prize Mr. Douglas staged an evenly-matched half-dozen, including *Cocos Weddelliana*, *Croton Wismannii*, *C. undulatum*, in good plants. An extra prize was also awarded to Mr. R. Butler, gardener to H. Gibbs, Esq., Regent's Park, for a small but effective group. In the nurserymen's class Mr. Williams secured the first prize with a fine group, amongst which *Dasylirion acrostichum*; *Pandanus Veitchii*, *Phormium tenax variegatum*, were noteworthy. The second prize came from Messrs. Hooper & Co., who showed fair-sized specimens in choice variety.

Hardy Flowers.—The class for Alpines in pots was badly represented, the only exhibitor being Mr. Parker, Tooting Nurseries. Amongst these were *Saxifraga muscoides purpurea*, a little gem but 1 in. or so high; *S. Mawiana* was also shown in fine flowering condition. Some well-filled baskets of the brilliant *Gentiana acaulis* formed a very beautiful feature in Messrs. Osborn & Son's collection, as was also the beautiful little *G. verna* in that of Messrs. Henderson & Son. Cut blooms of the curious yet handsome *Iris iberica* were very noticeable in Messrs. Veitch & Son's group, and were much admired. A numerous and choice collection of cut blooms of *Pansies* was exhibited by Mr. H. Hooper, of Bath, the newer varieties amongst which were very beautiful. A flowering branch of *Pyrus (Malus) floribunda* (figured in THE GARDEN, Vol. X., p. 384) was sent by Mr. A. Waterer, Knap Hill.

A list of awards will be found in our advertising columns.

No. 593.]

SATURDAY, MAY 31, 1879.

Vol. XV.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—Shakespeare.

ALPINE FLOWERS AT YORK.

In speaking of the Alpines now in flower on the rockwork in Messrs. Backhouse's nursery at York, I will mention them just as they occur to me. The rock garden is approached from the north by means of a zig-zag path sunk towards the lower end considerably below the ordinary ground level until the banks become so steep, that rocks are required to hold them up. Here the rockwork proper commences. The first plants which attract attention are huge masses of *Primula Auricula marginata*, bearing large trusses of yellow fragrant blossoms, and associated with these may be seen two fine specimens of a rare *Saxifraga* (*S. Tombeana*), a species which produces white flowers early in the spring. Here, on looking round, one sees every ledge and fissure occupied by Alpine plants, amongst which some of the finest are *Myosotis rupicola*, *Erysimum pumilum*, *Saxifraga lantescens*, *Anemone fulgens*, *Phlox subulata*, *Sedum asiaticum*, *Aubrieta græca superba*, *Alyssum saxatile compactum* and *A. montanum*. This last is a very useful plant for a hot, dry position, where it flowers most profusely. It is a very dwarf kind, and bears large heads of showy yellow flowers, though the whole plant is not more than from 3 in. to 4 in. high. A few paces further on and a narrow neck of water is reached, a sort of connecting link between two pieces of water. To the right are examples of the mountain Pine (*Pinus montana*) with crooked and weather-beaten stems, which, overhanging the track, give the whole place an air of Alpine rusticity. A little further on still is a shelving bank of stony earth interspersed with Alpine plants, and a bank of Grass in a sort of semi-wild condition. To the left, that is, on the opposite side of the water, in the distance are large Pines, Spruces, Larches, &c., while in close proximity, and shelving down to the water's edge, may be seen a combination of *Polystichum*, *Lastreas*, *Polypodium*, *Cystopteris*, *Adiantum pedatum*, *Struthiopteris*, *Orchides*, *Globe-flowers*, *Lily of the Valley*, and wild *Primroses*, all struggling for existence amongst the Grass. Advancing a few strides and pushing past another veteran bush of the Mountain Pine, a pond of water is reached, and looking across to an island just opposite may be seen large tufts of the English Lady's Slipper (*Cypripedium Calceolus*), and very fine indeed they must be when in flower. I also noticed two fine patches of the new rose-coloured *Primrose* (*P. rosea*) in a remarkably thriving condition planted near the water line. The same remark also applies to *Saxifraga pedemontana*, a kind, I believe, seldom seen in gardens. It is a distinct plant, having large, thick, deep green leaves, and bearing panicles of large, showy, white flowers. A lovely display of *Myosotis dissitiflora* and *Narcissus juncifolius* intermixed next presented itself on a steep bank faced with stone, the earth sloping down to the walk, and the yellow flowers of the Daffodil mingling interestingly with the blue blossoms of the Forget-me-not. Hanging from the rocks is *Cytisus Arduini*, a fine dwarf Alpine shrub, bearing arching racemes of golden-yellow blossoms; and at the foot of the rocks in a damp and shady nook, *Andromeda fastigiata* forms quite an attractive feature. It is by no means a common plant; in fact, it is rarely seen in such good condition as it is here, where it forms a tuft 18 in. across, loaded with *Lily of the Valley*-like flowers of exquisite loveliness; associated with it is another pretty dwarf evergreen shrub, viz., *Menziesia empetriformis*. On the ledges up among the rocks grows the white *Fritillaria*, a desirable plant anywhere, but, situated where its pure white bell-shaped flowers can be seen from below, its beauty is greatly enhanced. Pushing forth from the base of a huge rock is *Meconopsis aculeata*, a plant which grows from 2 ft. to 3 ft. high, and bears nearly throughout its entire length a profusion of large saucer-shaped, nodding, purplish-blue flowers. Unlike *Meconopsis nepalensis*, this plant is a true perennial, and is on that account of much more value than that kind. Now we have reached the south and main portion of the rockwork on which flowers are very numerous and beautiful. One of the most prominent features here is a large conical summit clothed with *Gentiana acaulis*, completely smothered with flowers, and a solitary tuft of the white *Fritillaria* and a mass of *Arabis albidia* greatly enhance the beauty of the blue flowers of the *Gentian*. A more beautiful sight than this it would, I think, be difficult to find. Near this spot are two fine kinds of dwarf *Iris*; one, *I. obliensis*, from 2 in. to 4 in. high, and bearing large, deep blue flowers; the other, *I. Cengialti*, a little taller, and with even larger and deeper and more intense blue blossoms. To the Alpine Poppy, with its yellow, white, and scarlet flowers, belongs quite a charm of its own;

and *Lithospermum tinctorium*, a new species, is a real gem; it has large, very dark, brilliant, blue flowers, which continue in perfection for many weeks, and it is a plant by no means difficult to grow. The Arctic Bramble (*Rubus arcticus*) is a desirable plant; it has rose-coloured flowers, borne on slender stems from 2 in. to 4 in. high. Associated with this was a beautiful Violet with pure white, wax-like flowers—a white variety of *V. pedata*. *Delphinium tricornem*, a dwarf Alpine Larkspur, is another valuable acquisition. Its flowers, which are purplish-blue, possess an indescribable lustre, and are borne in a compact spike from 4 in. to 6 in. long, the whole stem being from 6 in. to 12 in. high. *Veronica stauræifolia*, a prostrate kind with pale blue flowers; *Ranunculus Bertoloni* and other rare *Crowfoots*; *Silene acaulis*, *grandiflora*, and *alba*; *Erysimum rheticum*, &c., may all be seen here to advantage.

Near the base of the rock the ground has been formed into irregular mounds, and into the lower parts have been introduced vast quantities of bog-earth in which the following plants seem to be in a thriving condition, and some of them are in flower, viz., *Trillium grandiflorum* and the dark-flowered *T. erectum*, *Erythronium giganteum*, *Primula cortusoides amena*, a tuft fully 1 yard in diameter, full of flower; *Iris cristata*, a little beauty in boggy places; *Mertensia paniculata*, a charming kind; various kinds of *Globe-flowers*; and different species of *Pyrola*. Here, too, on raised portions of the ground I noticed *Polygala Chamebuxi purpurea*, which is, without doubt, the most beautiful Alpine that has been introduced for a long time. It is very dwarf and neat in habit, evergreen, and produces its flowers, which are deep purple or magenta with an orange centre, in great profusion. I must not omit to mention the *Lady's-slippers*, which, though not in flower, bid fair to be very gay. *Cypripedium spectabile* and *C. pubescens* are unusually vigorous.

Leaving the rock garden and passing through an opening in the trees, we find ourselves amongst Alpine plants cultivated in pots, plunged in 4-ft. beds, and in one of these beds there is just now such a display of the Vernal *Gentian* as I never remember witnessing before, at least in cultivation. There must be some hundreds of flowers, the whole forming a compact mass of the most dazzling blue.

P.

RAISING ANTIRRHINUS FROM SEED.

THE homely Snagdragon, with its old-fashioned associations and its bright, cheerful, delicate, and pleasing colours, is one of the most attractive of our hardy biennials, and is perhaps as prodigal of bloom as any other plant that can be named. But such a severe winter as that which we have just passed through, following upon a wet autumn, has sorely tried the plants, and whole plantations of them growing in retentive ground have been killed outright. Where plants have occupied lighter ground, or a drier position, many of the Snagdragons have escaped; but many more in less favoured spots are utterly lost. It has been an exceptional winter, and many years may elapse before another happens so trying in its effects on vegetation generally.

It is usually recommended that the seed of *Antirrhinus* be sown in July to have plants to winter for the following summer. A better plan than this can be adopted, carrying with it greater advantages, namely, to sow seeds in January or February in a gentle bottom heat, and by pricking off the young plants into pans and boxes, get them on into size as speedily as possible. If these be planted out in a prepared bed at the end of May or early in June (taking advantage of showery weather to do so), they make good bushy plants by August, and all bloom at the end of that month and through September. The advantage of this plan is that the cultivator sees the quality of his flowers the same season as they are raised from seed; he can reject inferior ones, and utilise the best varieties for planting in prominent positions in autumn and spring. If the winter cuts his plants off, he will have seen something of their value; and any thing particularly good can be lifted and put into a cold frame, or some other place of protection to keep them from the possibility of harm.

Exhibitors of *Antirrhinus* at exhibitions held in July and early in August will find the foregoing method a good one for obtaining some good spikes of bloom for show purposes at the end of June and early in July, if they be required so early in the summer. Cut blooms of *Antirrhinus*, shown in bunches of three, four, or six spikes, find a place in many schedules of prizes, and when cut from good varieties and well arranged in a cut flower stand they are very attractive. The plants that flowered the previous September, if they survive the winter, which they do in nine cases out of ten, grow into good size by July, and furnish very fine spikes of bloom.

In proportion as the *Antirrhinus* receives generous treatment, so will it produce fine blossoms. What might be termed a holding loam, well manured, and deeply dug before planting, makes an excellent bed; and in order that the plants may display themselves to the

best advantage they should be planted at least 18 in. to 2 ft. apart each way; this gives them ample space in which to develop. The seedling plants might be planted out nearer together in May and June, and the very best sorts replanted in another bed in October, lifting the plants with good balls, and treading the soil firmly about them. If a severe winter follows, these transplanted plants are likely to suffer more severely than those not disturbed.

During the past ten or twelve years the habit of growth of the Antirrhinum has become much dwarfer than it used to be. I can remember thirty years ago when Mr. J. Riley, at that time of Huddersfield, used to get Antirrhinums to great dimensions, and it is on record that one of his plants, flowered in 1848 with others produced from cuttings of the best seedlings raised in 1847, measured 7 ft. high and 4 ft. 2 in. in diameter; and this specimen, though the largest, was not very much above the average of the plants obtained, be it remembered, from cuttings taken the previous autumn. In the case of small gardens, plants of that size would be very embarrassing, but from such plants it was not unusual to cut spikes 24 in. in length.

A good type of Antirrhinum is one that is of dwarf, compact, and yet free branching growth, and from 2½ ft. to 3½ ft. high when in full bloom. The Tom Thumb varieties are much dwarfer; the Continental types are often of inferior quality, but some of them are very pretty. They are being improved upon, especially in the way of obtaining very handsome striped flowers.

The Snapdragon deserves a hearty welcome to every garden. Those who have not sown seeds of it should do so at once, in order to secure good plants for flowering early next summer. R. D.

HARDENING OFF SUMMER BEDDING PLANTS.

THOSE who have much bedding out, as it is called, to do know full well that the plants which they employ should be, when placed in the open air, both healthy and vigorous. Our summers are subject to considerable fluctuations of temperature, and the season throughout is often so unfavourable that weakly or unhealthy plants have but little chance of succeeding. Anything, therefore, which tends to check them when turned out of their winter or spring quarters should be carefully avoided. And yet one often sees the ordinary run of bedding plants subjected to treatment that cannot but prove inimical to their future welfare. A common practice is that of placing them, when removed from glass structures, under wide-spreading trees. It is true that they are there protected from frost, but in other respects such positions, unless exceptionally well-sheltered, are unsuitable. The chilly wintry air which too often prevails in May blows through them, and so cripples them, that they need half the summer to regain their normal vigour. Where there are plenty of cold frames hardening off is an easy and satisfactory process, as on cold nights and windy, chilly days the sashes may be left on, merely allowing free ventilation. Hardening off may then be so gradually conducted, that the plants will retain all their freshness and vigour, and will go into their summer quarters with an unimpaired constitution. Plants thus treated will be certain to outstrip those which may have become crippled from hasty exposure. These remarks apply even to such comparatively hardy subjects as zonal Pelargoniums, Lobelias, &c., but they are still more applicable to such tender plants as Coleus, Cannas, &c., which are at all times impatient of cold draughts and sudden chills. Spring-struck Verbenas, Alternantheras, &c., often show the effects of reckless exposure the whole summer through, and many of the failures in Verbena culture might be traced to this cause alone.

The process of hardening and solidifying the tissues of young plants must be a very gradual one. In this matter the grower will have to be guided by the nature of the plant, and the way in which it has been treated during the winter and spring. Autumn-struck Verbenas and Calceolarias, for instance, may be hardened off and rendered capable of bearing full exposure, except on frosty nights, by the beginning of April; whereas many of the more tender kinds of bedding plants, and most of the so-called sub-tropical plants, can scarcely be fully exposed until the beginning and sometimes the middle of June. Tricolor Pelargoniums, for instance, in three seasons out of four, succeed best if kept in sheltered quarters until the second week in June.

Those with whom frame room is scarce during April and May should endeavour to provide some kind of efficient protection for their plants when turned out of the glass structures. A span-roofed framework constructed of stout 9-in. boards for the sides and ends, with a light, strong, ridge board and some bearers nailed thereto to support the mats, will be found capable of affording ample shelter, and if about 8 ft. in width, every plant therein will be well under the eye, and may be easily watered. These protectors should be erected in the warmest, sunniest corners in the garden, where, if possible,

the east winds which are apt to prevail in the spring do not touch them. Therein all may be covered up secure and warm on frosty nights and cold days.

A more simple, but equally efficacious, contrivance may be made with Hazel rods, bending one from each side, and tying them in the middle. In fact, spring protections are so easily and inexpensively constructed, that the wonder is that they are not more extensively used for all kinds of purposes. Not only do they afford the shelter which in cold seasons is so much needed, but they enable us to enjoy both fruit and vegetables at an earlier period than we can obtain them when they are fully exposed. Whether the garden be large or small, some system of protection should, therefore, be organised. One season's trial will convince the most sceptical that time and care bestowed on hardening off bedding and sub-tropical plants are not mispent, and that, even in the case of the commonest and hardiest kinds, the treatment just indicated is better than merely placing them under the shelter of trees or walls. J. CORNHILL.

Byfleet.

AURICULAS—WHITE MOULD AND POTTING.

I AM not sure that botanists have determined this to be a Fungus, but I term it so for the sake of giving it a definite designation. It is sometimes called the white mould, and it fastens itself on the roots of the plants that wind themselves about the insides of the pots, and if the soil about the roots becomes dry, and the plants kept in a warm place, it appears to spread with remarkable rapidity until the whole of the roots exterior to the ball of soil are affected by it. The presence of the mould soon shows itself in the plants, the leaves turn sickly, and the plants get into a very poor state of health, and sometimes die. Years ago, it was known to the old growers of Auriculas as the "white froth," and they used to find it in the heart of the plants where it can be too often met with in these days, and they have left on record their experience, that if it is allowed to remain it will be pretty certain to induce canker.

How it originates, or what causes predispose it to appear on the roots have not been made clear to growers. But it exists, and it is a very troublesome pest. It showed itself on a very few of my plants, and the leaves soon told the tale. As soon as there were signs of the presence of the mould, the soil was shaken from the roots and burned; the roots were carefully washed in soft water, and well rinsed after, and the plants put into small pots to induce renewed root-action as soon as possible. Every grower who has the mould in his collection, will do well to utterly destroy all traces of it by burning the soil, and so stamping out any remains of it.

As a precautionary measure, I think growers will do well to be very careful as to the character of the leaf-mould they use for their Auriculas. I am under the impression that the "white froth" is a Fungus generated by vegetable matter in a certain stage of decomposition, and I have been led to take up this supposition from the fact that I used a certain lot of leaf-mould in potting a few of my plants, and these very plants included the worst affected. The leaf-mould should be so decomposed as to be literally mould and with no trace of any leaf in it. This should be turned over, sweetened, and well exposed before being used. Auricula compost should be as well sweetened and seasoned as it is possible for mould to be.

When conversing with Mr. John T. D. Llewellyn, of Ynisgerwn, Neath, some time ago on this very matter, he said that he had been troubled with the white mould in a few of his plants, and, on discovering it, had shaken all the soil from the roots and washed them in a very weak mixture of paraffin and water, and then repotted them; and he had found them do well afterwards. To the best of my recollection, he said he had mixed about half a tea-cupful of paraffin with four or five gallons of water, and he had found a little of this mixture given to some plants, the soil of which was so affected, had helped to kill it. Mr. Llewellyn had wisely confined his experiments to some common sorts, but he had been led to think it might be safely applied to choicer varieties. Mr. Llewellyn's experience had induced him to think that the white mould spreads more rapidly on the roots of plants allowed to become somewhat dry, and I am disposed to favour this theory, for two or three of my plants most affected with the mould had become very dry indeed, and the mould had spread with great rapidity.

Now that Auriculas are being repotted, the cultivator should take every precaution he can to prevent the growth of mould in any way. The month of May is undoubtedly the best time to repot, at the same time separating any plants that require it. A soft yellow loam with a kind of silken texture to the touch, as full of fibre as it is possible to be; some of the leaf-mould I have already described; some decayed stable manure, reduced by age to a black powder; and some silver sand, or finely-broken charcoal, make up the compost I am this season using. The loam is not sifted; it is simply crumbled to pieces—being in the form of lumps of fibry turf—and none of the

fibre is taken out. Young offsets potted at the end of April are growing freely in this compost, root and leaf alike flourishing. At the time of potting I shake out the whole of the soil from the roots, shortening back the tap-root, or "carrot," as may be required, and then repot in thoroughly clean or new pots, giving them plenty of drainage. Generally I am putting the plants into smaller pots than last year, putting the strongest growers into the largest size. If by the end of August the more robust growers in the smaller pots need a shift, it is easy to give them one. There is much less danger from under-potting than from over-potting. Some of the plants Mr. Turner, of Slough, exhibited at the Southern Auricula Show in the Horticultural Society's Gardens in April last were in quite small pots, but they carried beautiful heads of bloom.

I am potting harder than last year; that is, the soil is pressed more firmly down about the roots. That they will find their way about among it, I have no fear. This is a great advantage in the case of young stock, as the soil does not dry so readily in drying weather as when it is lighter and more open. I think it is well not to use too light a soil in the case of Auriculas; I am this season using more yellow loam and less leaf mould, making the compost more adhesive. It is most important that there be sufficient drainage; a water-logged soil is certain to be injurious to Auriculas, and especially to the more tender varieties; i.e., varieties with a less robust constitution.

R. D.

THE SNOWDROP ANEMONE.

(A. SYLVESTRIS.)

Most of the Windflowers are beautiful, but this is one of the best, as it is comparatively dwarf, and very free as regards flowering, its



The Snowdrop Anemone.

pure white blossoms being as large as a crown piece when fully blown, and drooping gracefully when in bud. The foliage is elegantly cut into narrow segments, and is hairy underneath. This Windflower is a capital plant for the ordinary flower border, the lower parts of the rockery, or the margins of shrubberies, by the sides of woodland walks, in the wild garden, in all situations being quite indifferent as to the nature of the soil, provided it be not too dry. It comes from the groves and from hedgerows in many parts of South and Central Europe, where it presents a showy appearance during early summer.

W. G.

Drooping Star of Bethlehem in the Wild Garden.—This pretty species (*Ornithogalum nutans*) is one of the best for planting in the wild garden and similar places, as it is rapid and vigorous in growth, and scatters its seeds far and near, which grow freely, so that it soon makes effective masses. In the American Garden at the Fulham Nurseries it is now beautifully in flower, and the tall stems of drooping blossoms are very effective when in large masses, as seen here.—W. G.

YUCCA GLORIOSA IN TEXAS.

I WISH I could show you here a full-grown specimen of the *Yucca gloriosa*. It is quite common in this region, and is one of the first objects in the Texas vegetable world that attracts the attention of the new-comer from the more Northern States. The two very striking peculiarities of this *Yucca* are the leaves and its enormous bloom. So formidable are these leaves that the tree bearing them has received here the common name of Dagger Tree. As the tree increases in height the undermost leaves drop, exposing the smooth bark below them. It attains a height of from 12 ft. to 15 ft. So now you can imagine the appearance of this *Yucca*, as its head of great green swords, supported by the clean naked trunk, constitutes the entire tree. Sometimes the trunk branches out and supports several such heads as we have described, often so closely pressed together as to appear to constitute one gigantic crown of monstrous thorns. About the 1st of March a spike shoots upward from the centre, and here grow the flowers, an enormous plume sometimes 3 ft. long and 18 in. in diameter, and so compactly placed as to seem a solid mass. The ruling colour is a rich shining creamy white, which is varied by a light tinge according to the sub-variety. The tree itself is beautiful, and when it is surmounted by its glittering plume in such a gay contrast with its long bright green leaves, the *Yucca gloriosa* is certainly a prince in the floral kingdom. I have seen this flower at a full distance of two miles when circumstances were all favourable to a distant view.—"Gardeners' Monthly."

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Potting Auriculas.—According to Mr. Douglas, Auricula potting for the forthcoming season should have been commenced a fortnight ago, but I think he is wrong in recommending this, because early potting is apt to produce autumn blooming, and any plant which blooms thus is weakened for the spring flowering. Old Auricula growers say it is better to let the plants grow on in shade for two or three weeks yet, during which time all shoots are to be taken from them and potted off; by this plan the plant acquires strength after its flowering, and is not likely to put forth blooms in the autumn. Perhaps Mr. Horner or some other northern authority would give his opinion on this point.—BROCKHURST.

Orbus vernus on Rockwork.—This old-fashioned early spring-flowering plant makes a charming subject for the rock garden, as in such situations it becomes dwarfed and more floriferous, and its many-coloured Pea flowers are seen to better advantage than on the ground; on rockwork, too, it blooms very much earlier. This plant might have been appropriately named *mutabilis*, taking into consideration the varied tints which the blossoms assume between opening and decay.—THOS. WILLIAMS, Ormskirk.

Effects of the Frost.—It may, I think, be roundly stated that almost all herbaceous plants which die completely down have passed through the winter unhurt. Of sixteen varieties of *Aquilegia*, including *cerulea* and *chrysantha*, I have not lost one. The same may be said of *Saxifraga*, but *Sedums* have suffered greatly, many sorts being entirely cut off. Mr. Williams, of Ormskirk, recommended *Mesembryanthemums* for rockwork, and I got *M. edule* and *Taylori* accordingly, but they are both dead; so are *Yuccas*, and, in short, all the succulent plants have suffered greatly. All the Gorse, Broom, and Heath tribes have been cut down, but many are sprouting again. Some large *Arbutus* shrubs which fruited here last autumn are quite dead. Of *Roses* I think only two are lost out of about 130 sorts grown here.—BROCKHURST, Didsbury.

Dates of Rose Shows.—I must differ entirely from "Cambrian" in his remarks on this subject. He has, by-the-by, made a great mistake in imagining that the date of the National Rose Society's Exhibition has been altered. The date of the Pelargonium Society's Show (to which the Royal Horticultural Society add a Rose show, a very different thing from the National) has been altered, and I think very unwisely. I have never known postponements to answer, whether in picnics, flower shows, or any other kind of arrangement. Plans have been made, persons arrange for them, and are consequently put about when the date is changed. In a flower show there is another objection; it may be done with the very best intentions, but there are always sure to be some people who imagine it to have been done to suit somebody. In the present case the inconvenience is already felt, witness the notice just above "Cambrian's" note; there must be a double examination of plants sent in for certificate of merit; and as to the postponement of a Pelargonium show five weeks before the date on the plea of weather, it would seem to me that the resources and skill of English gardeners must

be at a low ebb if they could not manage to overcome that little difficulty; and even as to Roses, I think it is all wrong. People are judging about the future condition of Roses from their experiences of the past few years. They were much more forward, but then came that cold wave about the 20th, with its frosts, which most materially checked their progress. This year we have had a long and dreary winter and cold spring. Roses were on the 13th, when the Royal Horticultural Society altered the date of their show, no doubt very backward, but since then a great change has occurred; the cold northerly winds seem to have left us, and the effect of genial rains and sunshine has been marvellous. We have had no such check about the 20th as we have generally had, and Roses, amongst other plants, have completely altered. I am astonished now (the 24th) to see the progress mine have made; not only can the buds be felt but seen protruding from the foliage; shoots have grown 7 in. or 8 in., and if this sort of weather continues, or indeed if we have no very decided check, as I think is not improbable, I am quite prepared to find that on this day five weeks Rosarians will say the National Society's day is not a bit too soon. *Nous verrons.*—DELTA.

New Zealand Flax.—I am glad to find from Mr. Baines' statement that the variegated variety of this Flax is likely to be even more hardy than the normal form, for if so it will be one of the most strikingly ornamental plants for outdoor decorative purposes in cultivation. Except in very favoured parts of England, I am afraid, however, from my experience of both forms, that neither will stand our climate without protection, but, fortunately, owing to their growth and general habit, this is an easy matter, as a few leaves or Bracken heaped around their collars are sufficient to shield the vital part, for if the crowns and hearts of the plants do not get injured they start away freely again in the spring. It is singular that the striped variety should be an exception to all other variegated plants as regards hardiness, that is, so far as our present knowledge of variegated plants goes, for, as a rule, they are tenderer than green forms, the leaves always suffering first and most in parts where there is the greatest absence of chlorophyll. This is very striking in cases in which the variegation occurs at the extreme margin of the leaves, the edges of which soon become affected by damp or cold, and frequently die off altogether. It may be that the *Phormium tenax* having bands of green running up the entire length of the leaves between the creamy-white gets better fed in that part, and, being less sappy through a more restricted growth, the severity of the weather has not so much effect upon it. Although the *Arundo Donax* proves quite hardy with us without any protection, the variegated kind gets killed, and will not succeed with all the coaxing we can give it, and I suppose it is equally unmanageable elsewhere, as I do not remember to have seen it, except under glass. It would appear, therefore, that the variegation has much affected its constitution, and not only is it so with that particular plant, but with all others with which I am acquainted.—S. D.

Haberlea rhodopensis.—The accompanying illustration of this plant is taken from a drawing of it which was sent to us by Herr Max Leichtlin, of Baden-Baden. We lately had occasion to refer to it on its flowering in Mr. Joad's garden at Wimbledon for the first time in this country. Apart from its beauty, it is highly interesting, as being one of the few hardy members of the family to which it belongs. This little gem comes to us from the Balkan Mountains, where it is found growing amongst Moss, &c., on damp, shady, steep declivities, at considerable elevations; hence we may reasonably presume that it is perfectly hardy, though on account of its rarity it has hitherto been grown under glass in this country. It apparently thrives under similar treatment to that afforded to its cognate the Pyrenean *Ranunculus* (*R. pyrenaica*), which in habit and general aspect it somewhat resembles. It has, we learn, been successfully imported in quantity to this country, and may be found in several of the London Nurseries.—W. G.

Lilium Batemanniae.—In the "Botanical Register" for the year 1839, Pl. 33, we have, I believe, the true *Lilium Thunbergianum*, flowered by Messrs. Rollisson the previous year. I doubt whether that was increased, or even saved; at any rate we have had for years past, under the name of *Thunbergianum*, many varieties of a Lily, all of them entirely dissimilar to the original both in flower and foliage. No one can doubt the characteristic accuracy of Miss Drake's drawing in "The Register," neither can we question the present figure with Dr. Wallace's description, but are not the two identical? and is not the recent introduction rather *Thunberg's Lily* recovered than a new discovery?—T. H. A. H., *South Devon*.

Primula cortusoides amona alba and **P. cortusoides**.—Of these I grow quantities; I have them both potted and massed in the border. In both cases they are mixed, and beautiful they look; a double row in pots in a small late Peach house is superb. Of those outside it may be said the blooms are not so clear, but they

possess a stoutness which makes amends for that deficiency. Several *Androsaces* have borne seed, and the same may be said of *Saxifraga Burseriana*. *Tritoma glaucescens* and *Uvaria* have surprised me. I thought they were killed, but they are coming up stoutly. *Roses* are badly infested with grubs.—J. Wood, *Kirkcaldy*.

Sparrows and Primrose Blooms.—If Mr. Groom (p. 392) has actually caught sparrows in the act with which he charges them, they must answer for their sins; for my own part, after much watching, I have never once detected a sparrow, but I have found the green linnet (*Loxia chloris*) to be the delinquent, destructive alike of Primrose and Polyanthus. My remedy (and a successful one) is string, with pieces of paper suspended immediately above the plants.—T. H. A. H., *South Devon*.

Narcissus pumilus.—This, I believe, is known and sold in some places as *N. minor*. However, from the description which I gave of the plant (p. 388), whatever may be its true name, it cannot be mistaken.—THOS. WILLIAMS, *Ormskirk*.

TREES, SHRUBS, AND WOODLANDS.

NEW SWEET-SCENTED RHODODENDRONS.

A VERY fine group of early flowering sweet-scented *Rhododendrons* has been raised by Mr. Isaacs Davies, of Brook Lane Nursery, Ormskirk, and they formed a remarkable feature in a large and interesting group of spring flowering plants, exhibited by Mr. Samuel Barlow, J.P., Stake Hill House, Slattocks, near Manchester, at the meeting of the Manchester Botanical and Horticultural Society on April 29.

Attention should be called to these sweet-scented *Rhododendrons*, for their excellent qualities are obvious. They are remarkable for a bushy habit of growth and marvellously free blooming character; the flowers are very large and of handsome shape, generally white, and here and there tinted with faint lines and streaks of bluish lilac; in addition they are richly fragrant, and remain for a considerable time in flower. Their being almost or quite hardy, except in times of unusual severity, they are easily cultivated, and invaluable for greenhouse decoration. One great recommendation is they are early bloomers, and come on early in cold houses without the assistance of artificial heat.

The plants shown by Mr. Barlow were in excellent condition, the most striking being one of the newest, namely, Countess of Derby. The flowers are of the purest white, bell-shaped, handsome in form, and deliciously fragrant; and so free of bloom is this variety, that quite small plants of it in 3-in. pots appeared as if they would break down under the load of flowers they bore. Next in point of merit comes Lady Skelmersdale, also bearing white flowers of large size, but of such a symmetrical appearance as never to be ungainly in aspect; quite a small plant of this shown singly in Mr. Barlow's collection had eleven trusses of bloom, and these contained on the aggregate between sixty and seventy flowers. Countess of Sefton has a bushy compact habit of growth, the flowers large, fragrant, cup-shaped, white, with a band of rosy-purple on each side of the corolla, which is handsomely fringed, imparting to the flowers a peculiarly attractive appearance. Mrs. James Shave, Duchess of Sutherland, and Miss Davies are all white-flowered varieties, the second of these three, like Countess of Sefton, having the flowers finely fringed; they are all distinct enough to form a collection, and are of great value as decorative plants.

These *Rhododendrons* are managed by Mr. Barlow in a very simple and efficient manner. He has a long span-roofed house, sunk below the ground level, in which he at certain times of the year cultivates *Auriculas*, *Polyanthuses*, *Lilies*, and many other interesting hardy plants; and here the *Rhododendrons* are kept during the summer after being potted when they have done blooming. They are potted in a compost made up of peat, sand, fibrous loam, and a little Cocoa-nut fibre, well mixed together. After being potted they make a free growth, which should be encouraged, as it conduces to the formation of good specimens. These *Rhododendrons* are not quite hardy, and should be protected from frost and wintry weather to ensure their being kept from harm. When the buds begin to swell, the plants can be removed to a comfortable greenhouse or conservatory to get them into flower early.

The freedom with which these sweet-scented *Rhododendrons* flower has a kind of chastening influence on the plants, correcting anything like a tendency to rampant growth. All the training they require is just sufficient to keep them to something like a handsome appearance, avoiding that tendency to tie in a rigid shape which is so common among some plant cultivators. R. D.

WATERSIDE PLANTING.

NOTHING adds so much to the charms of a landscape as the presence of a lake or a river, more especially if their margins be planted with trees and shrubs. Sombre masses of Conifers, the feathery forms of Birches and Willows, and the fiery autumn-coloured masses of American Oaks and Maples all contribute their share of beauty to such situations. It may be said that dark impenetrable trees or groups should find no place on south sides, because of the gloomy shadows imparted to the water when so situated. One of the items not to be overlooked in such planting is the hue which the trees assume in autumn, a point next to form. Amongst the many American Oaks which become beautiful in autumn may be named *Quercus rubra*, *Q. Catesbei*, *Q. ambigua*, *Q. palustris*, *Q. coccinea*, and *Q. tinctoria*. These flourish magnificently in moist ground, and, whether associated in groups or placed as solitary trees, yield charming effects, especially when hanging partly over the water. *Platanus occidentalis* succeeds well in such places. *Quercus pedunculata fastigiata* is effective either in the form of a group or singly; so also is *Celtis australis* by itself or associated with varie-

ties of *Alnus*. The *Celtis* is a good tree to plant where a rocky margin exists. *Catalpa syriacifolia* succeeds excellently with its roots partly immersed in water, and when mixed with such subjects as *Thuja occidentalis*, or *Juniperus virginiana*, or some dark green *Pinus* as a background to set off its masses of white blooms, the effect is all that could be desired. In good soil it will reach a height of from 50 ft. to 60 ft. Of *Poplars*, such kinds as *Populus alba*, *P. alba nivea*, the different varieties of *P. balsamifera* (especially *macrophylla* and *grandidentata*) and *P. græca* are indispensable. *P. pendula* should be used with caution, as, if planted in quantity, it seems to impart a sense of sadness to the landscape. The *Poplars* look best planted in groups with rapid-growing Conifers. The

Tulip Tree succeeds admirably in moist situations, and its autumn tint is peculiarly pleasing. With American Oaks it makes a happy combination. There is a pyramidal variety which is useful for lightening up round-headed groups. *Juglans regia laciniata* is likewise a low-growing pretty tree, as are also the American Ashes, such as *Fraxinus juglandifolia*, *F. aucubefolia*, and *F. longifolia*, the latter having foliage of a violet colour; *F. sambucifolia* is a tree with a most distinct character; also *F. lentiscifolia*. The pendulous kinds of Ash make good waterside trees, and the nearer they are planted to the water the better they look.

The Birches, such as *Betula alba*, *B. dahurica vera*, *B. grandis*, *B. lenta*, and *B. costata* make admirable small-sized groups or single specimens. Their only drawback is their inability to live long in such situations. Birches are perhaps most effective in groups planted thickly. *Acer dasycarpum*, with its reddish flowers and lacinated foliage, silvery beneath, should be found in every collection, as should also *Acer marginatum*, with its brilliant red autumn tint, *A. dissectum* syn. *palmatum* and *pseudo-platanus*, *A. tricolor*, and *A. Worleyi*, all of which are effective, and delight in moist ground.

Amongst trees of lower stature may be mentioned *Sorbus aucuparia*, the berries of which are pretty; also its variety *pendula*.

S. hybrida and *S. lanuginosa* are both fine-foliaged trees, the latter having a pyramidal habit and greyish colour. *Pyrus spectabilis* and its varieties make excellent single specimens, being beautiful both when in flower and fruit. *Hippophae rhamnoides* is a pretty low-growing tree, as are also *Eleagnus sativa* and *E. argentea*, both of which have neat grey foliage and bear small yellow flowers; they should not be planted in great numbers, at least, not in the vicinity of walks, their scent to many being unpleasant. The trees just named are certain to do well near water, provided the soil be not too unfertile; but the list of such subjects is by no means exhausted, and but few evergreens belonging to temperate climes have been included.

Moravia.

SYLVESTRIS.

CAMELLIAS AS HARDY SHRUBS.

MR. BAINES is usually apt to assume that he knew of the existence of any fact recorded in your columns forty years or so before any one who writes of it. His great experience, however, as regards *Camellias* is thrown

in the wrong scale, and it is clear to me that he has not seen the shrub under the best conditions in the open air. Many know, as he does, that the *Camellia* is hardy even in northern gardens, but that it is not worth planting for its flowers in such places. But it is not known to many (and among them Mr. Baines) that over a large district in the south of England the *Camellia* is not only hardy, but that it flowers better than it ever does in pots, and that even this severe season has not in the least dimmed its beauty in the Isle of Wight and a large area of the adjacent coast region. In many a garden in this region the *Camellia* would prove the handsomest of all hardy flowering shrubs. To see these shrubs in flower, standing on lawns without a shred of protection,

and with even after severe storms many flowers in good condition, would do Mr. Baines' heart good, and be even more agreeable than calling up his long experiences.

S. W.

TREE PLANTING IN CANADA.

GREAT encouragement is now being given by the Canadian Government to emigrants in the North West to plant forest trees upon their farms, for though at the present time the long, rich Grass upon the prairies helps to retain the moisture, it is often found that sufficient rainfall for the successful cultivation of the land is not assured in districts denuded of trees by forest fires and other causes. The Dominion Parliament, therefore, is giving liberal grants of land to settlers, who secure an additional quarter section at a mere nominal price of about 10 dollars on the condition that they plant up the 32 acres by annual instalments. As an incentive to planting the example of an extensive Minnesota farmer has been quoted, who, two years ago, covered 72 acres with cuttings of Cotton wood, Poplar, and White Willows. These are now from 10 ft. to 14 ft. high, and in the most flourishing condition. The same planter put in several bushels of seed of Oak, Elder, Elm, Maples of various kinds, and Bass wood,



Haberlea rhodopensis (Frivaldsky). Balkan Mountains. A new Alpine plant; natural size; colour, delicate mauve-orange; throat with purple spots.

all of which have thrown up stems from 3 ft. to 5 ft. high. Belts of Oak, Ash, Whitewood, Tamarac, and Spruce skirt the banks of the rivers and streams. There are also considerable groves of Poplar upon the prairies, and this wood after being peeled is extensively used for fencing purposes. This and the soft Maple are very rapid in their growth, and the latter is considered one of the most valuable trees for shade.

The soil appears to be eminently fitted for the operations of the planter, as it consists of a black alluvial argillaceous mould, rich in organic matter, from 18 in. to 4 ft. in depth, and resting upon a strong clay. Its materials are, for the most part, finely pulverised, light and mellow. On the Red River twenty crops of Wheat have been grown in succession, without either fallow or manure, averaging 40 bushels per acre in good seasons. When land is selected for planting it is separated or enclosed by cuttings of the common woods of the district, which are inserted by the aid of a line to within two buds of their tops, and at an angle of from 30° to 45°. With clean cultivation during the first two years these cuttings soon form a barrier impenetrable to horses and cattle, and a valuable shelter to the after plantations. It is found that 10 acres planted in this way at 8-ft. distances will, at the end of five years, furnish all the fuel and fencing required for a large farm, and also realise a handsome sum from the proceeds of the sale of spare fence poles, which are sure of a market. The cuttings are planted as soon as the frost is out of the ground, and the operation is generally finished by the 1st of June.

To secure the planting of the land certain restrictions are placed upon the grant, of which the following are the heads:—

- 1.—The applicant (male or female) must be over eighteen years of age.
- 2.—That not more than 160 acres can be held by any one person for the purposes of forest tree planting.
- 3.—The land shall be open prairie and without timber.
- 4.—The applicant shall pay an office fee of 10 dollars at the time of application.

5.—At the expiration of six years from the date of entry the occupant is entitled to a patent for the land on proving to the local agent—

- (1).—That 8 acres of land entered had been broken and prepared for tree planting within one year after entry, an equal quantity during the second year, and sixteen additional acres during the third.
- (2).—That 8 acres of land had been planted with forest trees during the second year, an equal quantity during the third, and 16 more acres within the fourth year, the distance being 12 ft.
- (3).—That one-fifth of the land has, for the last two years of the term, been planted with timber and well and regularly cultivated and protected from the time of planting.

By the offer of such liberal terms on the part of the Government it is believed that these vast prairie lands will soon be clothed with timber, which the care and foresight of the intelligent settlers will, in most cases, isolate from the destructive effects of fires.

Pluckley, Kent. A. J. BURROWS.

WOODLAND WORK FOR JUNE.

THERE will in many districts still remain considerable quantities of bark to deliver, and even some trees to fall and strip. On the whole, the season has been one of the most unfavourable for such work which we have experienced for many years; the continuance of cold weather and frosty nights have so completely checked the flow of the sap, that but few trees have run well. No time or opportunity should now be lost in finishing the bark harvest and carting away the timber, faggots, &c., from the falls, after which a general clearance from the stools should be made and temporary roads cleared and stopped up for the summer. Bark in this district has realised from £4 5s. to £4 10s. per ton in the woods; and consequently the bark must be a short supply. In the case of recent falls it will now be necessary to look over the tillers and lighten the heads of such as are bent down by the weight of their foliage. These are sometimes numerous in fast-growing coppices, but timely attention will often completely restore them to an erect position. All injured branches of the store timber should also be removed by a clean cut close to the bole; and wherever damage has been done to the stools by wheels and the removal of timber, such should be at once trimmed off evenly.

As soon as time will permit, enclosing, draining, trenching, sub-soiling, digging, and pitting for autumn plantations may be taken in hand. Materials for fencing and road-making may also be carted where required, and composts formed in situations convenient for future use. A well-made compost is one of the most valuable auxiliaries of the planter, and no opportunity of collecting materials for such should be lost. Lime not only purifies and stimulates, but it also in the course of time enriches such admixtures of raw

materials. It formed one of the principal ingredients in the composts so largely used by Sir Henry Stewart, whose transplanting operations carried out early in the present century are among the most successful on record. Upon land infested with insects, and upon mossy lands and peat bogs after drainage, a heavy dressing of lime will render it unnecessary to pare and burn the surface.

Dig, hoe, or otherwise clean hedges, and trim such as are intended to receive another switching in the autumn. Also prune hedges of Burrz or Gorse, Privet, Holly, and Elder, and look well after the boundary fences of woods and plantations, so as to keep out live stock of all kinds. Wire fences may now require tightening, and either painting or tarring. Where tar is used, select a hot dry day for its application, and let it be well rubbed into the wooden standards.

Large trees intended for removal in the course of a year or two may now be cleared, and opened out, and have trenches dug round them at distances proportioned to their spread of branches, so as to cut away their straggling roots. The trenches thus formed should afterwards be filled up with the best soil obtainable, and the spaces between the trenches and boles well mulched and lightly forked over. These operations will all conduce to the formation of abundant fibrous roots.

In the nursery great activity will be required to keep down weeds, to crop the spaces cleared of seedlings, and to dig and hoe in the lines. In dull weather seedling Evergreens may still be pricked out, but they may afterwards require watering and shading. Beds of Exotics should be protected until all danger of frosts is past. The bandages of forward grafts may be loosened, though the clay upon late made ones will still require attention, and perhaps renewal. Variegated Hollies may be budded and their stems cleared of superfluous branches.

The seeds of the Elm generally ripen towards the end of June. In gathering such select tall, well-grown trees, and be particular in the handling and storing of the seed, as it is very delicate and heats quickly. On this account it should be well spread out if not sown the same day on which it is gathered. When intended to remain in the beds for two-year seedlings, it should not be sown too thickly, as the plants are apt to become drawn up and weakly. A covering of 3 in. of soil is sufficient, and this should be both rich and mellow. The seeds kept over for sowing in the following spring should be well and gradually dried before being stored away. An airy loft is the best place for storing them. The quality of Elm seeds may be ascertained by the firmness of the capsule.

Pluckley, Kent.

THE BARK AND TIMBER TRADE.

OAK bark stripping in this locality is now well nigh over for the season, and in the southern counties generally it will be brought to a close at the end of this week. This year's strip of bark will be considerably below the average quantity, on account of the very low price which Oak bark is realising; it is, on an average, about £1 per ton less than last year. This I gather from returns received of recent sales throughout the country. The Government sale of Oak bark in the New Forest averaged £4 5s. 10d. per ton, this being £1 3s. less than last year, or £2 0s. 6d. lower than in 1877. At Stamford, on the 16th ult., Messrs. Richardson offered 245 tons of new Oak bark for sale by auction; but it appears there is little demand for bark in that neighbourhood, for out of eleven lots only four were sold, representing 60 tons, at the low average price of £2 12s. 6d. per ton of 20 cwt. in the wood; the other seven lots, representing 185 tons, were bought in at the reserve price of £3. On the Woburn Estate, Beds, this year's bark was sold for £4 per (21 cwt.) ton delivered at the railway station. In Sussex and other southern counties the price has been, on the average, about £4 per ton of 21 cwt. tied up into bundles and weighed in the wood. At Newport, and other parts of Shropshire, the price ranged from £4 to £4 5s. per ton of 22 cwt., delivered at the railway station or tan yard. The bark in this neighbourhood (Longleat, Wilts) has been sold for £3 10s. per ton of 21 cwt., put on waggon in the wood and weighed at the nearest weigh bridge, or £4 per ton delivered at the tan yard; these prices being £1 less than last year, or £2 10s. lower than in 1877. I do not think I ever experienced so great a depression in the bark and timber trade; the latter is equally dull, and prices of all descriptions of timber are down, with perhaps one exception, and that is for well-grown copse Ash, there being still a demand for clean butts at a good price. The fall of timber throughout the country is sure to be less than in former years. I have no doubt that the timber trade will improve in another season or two, and in the meantime landowners would be wise to only cut such timber as is a necessity until the demand is greater than at present. On this estate we intend to make the cut short until timber, bark, Underwood, and faggots yield better return.

GEORGE BERRY.

Longleat.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS.

Remarkable Rhododendrons.—Among the Rhododendrons now in flower at Glenville are two plants of the *R. altacrense* remarkable for their size and the profusion of their bloom. One, the largest of the two, stands close upon 20 ft. high, and is 80 ft. in circumference at the base, where the branches rest on the Grass; higher up it is of greater circumference. It is a mass of flower from bottom to top and on all sides, as the plant stands free of other trees. It would be next to impossible to count the trusses of bloom. The other is about 17 ft. high and 40 ft. in circumference. It is of very symmetrical form, being an elongated dome shape. There is not one shoot on this plant that does not carry its truss of flowers, and at a short distance off it appears an unbroken sheet of crimson. As in the other case, the trusses could not be counted, and there cannot be less than 1000 on it. This, though an old variety, is a most desirable one to grow, as it is of free growth and a constant bloomer. Amongst the rarest Himalayan varieties in flower are Aucklandi, with eighteen trusses of beautiful rose-shaded white flowers; *R. cinnabarina*, with over eighty rich crimson blooms; *Windorii*, a rich scarlet, flowering for first time at Glenville, though the plant is a large and vigorous one. All who grow Rhododendrons should certainly grow Aucklandi, for beyond doubt it is the most beautiful of the tribe, and has a highly agreeable perfume. It is perfectly hardy, too, as its natural habitat is over 7000 ft. elevation.—“*Irish Gardeners' Record*.”

Bird Cherry (*Prunus Padus*).—There are many huge spreading bushes, or rather trees (for some of them are upwards of 40 ft. high, and as much or even more through), of this beautiful free-flowering and sweet-scented Cherry growing in different parts of the woods at Longleat, and just now their masses of blossom are everywhere conspicuous. This being one of the freest flowering, hardiest, and most easily cultivated of trees, the wonder is, that it is not more plentiful everywhere than it is. Numbers of it grow hereabouts in the hedges, scenting the air at a time when there is hardly another hedge shoot in bloom. Lilacs, too, are becoming plentiful in the hedges, and their blooming period quickly succeeds that of the wild Cherry. Laburnums, Hawthorns, and Lilacs bloom about the same time, except perhaps the Scotch Laburnum, which is about a fortnight later than the common variety. Liberal quantities of all these have been distributed about the hedges, so as to secure a succession of blooming plants until well into summer. Nor must I forget the sweet Briar, with which many gaps in the hedges have been filled up.—G. B.

Camellias in the Open Air.—I am at a loss to understand why the blooms of the Camellia should be regarded as more tender and more liable to damage from wind and rain in the open air than those of the Rhododendron, Azalea, and other hardy early-blooming shrubs. Are there not times when storms damage these? But will anyone assert that because of that misfortune neither Rhododendrons nor Azaleas should be grown out-of-doors? Those who have had experience of the Camellia in the open air know that for one bloom that may be damaged by the weather twenty or more are produced clean and beautiful. The growth of the Camellia is stiff, and its foliage hard and leathery; therefore the wind exercises less effect upon it than upon many other flowering shrubs. A daily paper announces that a Continental nurseryman is going to plant on one of the railway banks at Kilburn 100 Camellias, to be in flower next July during the Agricultural Society's exhibition. This will be a novelty, indeed, and might help to stimulate the cultivation of the Camellia as a hardy shrub.—A. D.

Spiræa Thunbergiana.—This is just now in full bloom. Several plants of it which I put out in the woods are now from 4 ft. to 5 ft. high, and form effective bushes. It is altogether a superior deciduous shrub, but not the dwarf plant “*W. G.*” seemed to infer it is when he said that it grows about 2 ft. high. I have several plants of in the nursery as well as those planted out in the woods, and I believe that in a few years they will be from 6 ft. to 10 ft. high, and as broad as high if allowed their full development. It is a very distinct and pretty Spiræa, one of the earliest to bloom, and not easily mistaken for any other variety; its small lanceolate leaves, and slender twigs clothed with white Hawthorn-like flowers, at once distinguish it.—G. B.

Buerger's Evergreen Oak (*Quercus Buergeri*).—The list of cultivated kinds of Evergreen Oaks is not large, and this handsome species is such a desirable addition that it well merits a passing note. It forms a tree or large shrub of noble, spreading habit and free growth. The leaves are as large as those of the common Laurel, but of a deeper green, and far more effective. In form they are ovate and pointed, and leathery in texture. It is perfectly hardy, having withstood the past winter with impunity, and now forms a fine feature amongst other shrubs in Messrs. Veitch & Son's Nursery at Coombe Wood.—W. G.

VEGETABLE CULTURE FOR MARKET.

FRENCH BEANS.—When Peas and Broad Beans begin to get comparatively scarce these are always welcomed. They always command a sale, provided they are good and fresh, and overstocking the market with them is almost a thing unknown; but when large quantities of them are introduced prices are of course affected. Under any conditions, however, and all through the summer, a good crop of Beans is a profitable one, and where soil and situation are at all suitable, market growers cultivate French Beans in large quantities. The principal kinds grown are the Newington Wonder and Long-podded Negro, which, although old varieties, are reckoned to be the two best. Their productive qualities are great, for when well attended to as regards timely picking of the pods, they continue fresh, vigorous, and fruitful for a long time, and their pods, as a rule, are less apt to turn tough and unusable with age than is the case with some varieties. The Black Belgian has also found its way into the market gardens; it is a good, dwarf, early sort, much like the Negro, of which it is considered to be a variety. It is very useful for late sowings and for early framework. Some growers prefer the Newington Wonder to all other sorts; it is a very prolific, dwarf-growing kind. Other growers prefer the Negro, which they grow in frames, for their earliest, main, and latest crops; but most of them also grow the Newington Wonder. The Canadian Wonder or Red Flageolet is a comparatively new kind, and one which will doubtless be grown largely for market. It is a robust grower, a good cropper, and its pods are as large as those of a Scarlet Runner and of good quality. Early crops of French Beans are grown in frames, such as have been cleared of Cauliflower and Lettuce plants; the mould in the frames is pointed over with a spade, and the Beans are sown in four rows under each light, and about 3 in. or 4 in. from seed to seed in the row when the soil is dry. The middle of March is the common time for sowing in frames, and then the sashes are kept close till the seeds have germinated, when they are tilted up a little at the back in favourable weather, but care is always taken to keep them close in the case of cold winds, and to cover them over with mats or litter in the event of frost. As the plants advance they are treated more hardily, but judiciously, judging according to the weather. After the middle of May, when all fear of frost has passed, the sashes are entirely drawn off throughout the day, if fine, and replaced at night. Whilst growing plenty of water is given them at the roots, and picking commences about the second or third week in June, or about three weeks sooner than the earliest border crops come into use. A few frames, too, are also frequently occupied by French Beans sown thickly, for the purpose of transplanting thence to the open ground, and to fill any blanks that may exist in the frames in which the sowings for fruiting therein have been made.

The first outdoor crop is usually transplanted from such frames, and the warmest possible position is selected for this purpose; the time for so doing entirely depends on the state of the weather and nature of the ground. If the weather be fine, the soil moderately dry and light, and the position warm and sheltered, the plants are commonly transplanted during the first fortnight of April, but if otherwise, they are delayed a little later. They are then lifted with as much earth adhering to their roots as possible, and are planted in little patches under hand-lights. The usual way is to draw lines 3 ft. apart across the border, others 2½ ft. asunder lengthways, and upon the middle of every little square thus marked place an ordinary hand-light, under which plant six or eight plants. If there be not sufficient hand-lights for the whole space to be planted, half-bushel vegetable baskets are

inverted over the plants ; and, as they are so open to the wind, they are sometimes covered for a time with mats. As soon as the Beans have got a good hold of the soil and begun to grow, their protection is removed. Great care must be exercised with hand-light Beans, otherwise they are a deceptive crop, and sometimes die off altogether, especially when nursed too tenderly and changed too suddenly, if the ground be cold and wet, and their top covering insufficient. Those grown in frames, and which come into bearing early in June, last in good picking condition for six weeks ; and those in warm borders begin to fruit in the last week of June or first week in July, and continue to yield a fair crop for nearly two months in a moderately moist season, if kept closely picked. The first main crop immediately follows the border ones, and, as a rule, lasts the longest. Drought makes them short-lived sometimes, but in rich soils, and warm, moist seasons, the yield is so heavy that it is scarcely possible to pick them as quickly as they grow. Drought, too, induces red spider, with which large fields are sometimes completely overrun ; and although this pest is very prejudicial to the health and longevity of the crop, there is no remedy for it.

The valley of the Thames is unequalled as regards the growth of French Beans ; the soil is not liable to excessive drought, and it is made light and rich by much working and heavy manurings. French Beans are gross feeders ; they require manurial substances of such a character as can be speedily turned to account ; therefore, land that was richly manured for the previous crop—such as for Celery—and which has afterwards again been liberally dressed with short manure, such as that from Mushroom beds or old Cucumber pits, suits them perfectly. The crop to succeed such as are grown under handlights is planted on a south border, in front of a wall or thick hedge if possible, which is dug over and lined off in cross-rows at 18 in. apart, drawing the lines in the form of seed-furrows with a hoe. Herein are planted Beans 5 in. asunder in the row ; they are earthed up in due time, and, if the weather be favourable, come into bearing three weeks after those grown in frames. Some growers erect barricades of mats in an upright position to stakes driven in the earth, and placed to the windward side of the borders ; and they also surround frames containing them, but not covered with sashes, with the same protection to ward off cold and frosty winds. Sowing begins out-of-doors during the first fortnight in April, just as the state of the weather and soil permits, and the warmest available position is selected for the purpose. If the ground be free from all other crops at the time of sowing, there is more need for a sheltered place than if it were cropped. In sowing, the lines are drawn at 2 ft., 2½ ft., and sometimes at 3 ft. apart, and the seeds planted about 4 in. or 5 in. asunder. The earliest crop is often sown in drills drawn between lines of Cauliflowers, Cabbages, or Lettuces. These crops, instead of being injurious to the French Beans when they appear aboveground, are simply beneficial to them, inasmuch as they protect them from cold winds until they have gained some strength and the weather becomes mild and warm, by which time the bulk of the Cauliflowers will have been removed for market. Even then, however, the Beans do not get all the space to themselves, for no sooner is the earth cleared of the other crop, than it is loosened a little between every alternate line, and those spaces replanted with Lettuces or similar crops. Thus one space contains another catch crop while the other is empty ; and by means of having this empty space to walk in, the women can pick two lines of Beans, one on either side of the empty alley, and never disturb the other crops in the alternate alleys. Should the French Beans have come up well, and be nearly ready for picking before the first occupants of the soil are entirely removed, the alleys are

not cropped again until they become exhausted. The drills for sowing are drawn in the morning of a fine day and left until the afternoon, when seeds are sown and some earth drawn over them. The first main sowing is made on the open field about the second or third week in April, under the same circumstances as that already mentioned, or the field may have been previously planted out with Cos Lettuces in lines 12 in., 15 in., or 18 in. apart ; between every two lines of these would be sown one of Beans. Along both sides of Asparagus ridges Beans also often find a place.

Some growers sow late crops in rows 4 ft. apart, and plant two rows of Coleworts in every intervening alley. Before the seeds appear the soil immediately over the seeds is gone over and slightly loosened with an iron-toothed rake so as to permit of an easy egress of the seedlings. When sown in bare fields, even though Lettuces be planted amongst them, a little ridge of soil is frequently drawn to the north or windward side of them as an additional protection from cold winds. Whilst the plants are growing they are rigidly attended to as regards keeping them clean and hoeing the soil, and when they reach 4 in. in height they are earthed up a little. The catch crops, too, are, cleared away as soon as they are ready, in order to give the French Beans every opportunity of a healthy development. Successful sowings are made every fortnight or three weeks, until the end of June, by some growers, but most of the large growers sow their French Beans about the 8th and 20th of April, the first and last week in May, and the first week in July. The last sowing consists of the Negro, and just yields a good crop of young and fine pods before being destroyed by frost ; whereas, were they sown a fortnight later, they would be apt to be nipped when coming into bloom. Gathering is well attended to, for if full-grown pods be allowed to remain too long on the plants the latter soon cease to bear. The Beans are gathered by women into baskets, which, when full, they carry on their heads to the ends of the rows, there to leave them to be carted home, where they are washed to remove the grit. They are then packed into round half-bushel vegetable baskets, which are covered with Rhubarb leaves fastened down with withies, and piled one above another on the waggon that convey them to market three times a week. Most market gardeners save their own seeds, and a piece of the main sowing is generally selected for this purpose. The plants in the rows to be saved for seeds are first subjected to two or three pickings for market ; then they are left untouched until the Beans are fully ripe, when the plants are pulled up by the roots, tied into little bundles, and slung in pairs across a fence or rail to dry. Sometimes, too, the haulm is spread over sashes to dry, and, in the event of wet weather, is strewn under some spare sashes, where it gets well dried without receiving any of the rain ; it is sometimes spread out over a series of sashes resting on frames, and other sashes laid over it again, and tilted up at back and front, so as to permit of a free current of air, where the seeds dry readily. They are then housed, and during wintry weather are thrashed, cleaned, and stored in rough brown paper or canvas bags, or placed in drawers, or the corner of a loft, until sowing time arrives.

SCARLET RUNNERS.—These, on account of their taking up more room, are not so largely grown near London as the dwarf French Beans. Their yield is not so great in proportion to the ground occupied, and they are also, unless supported by stakes, more difficult to gather. Round Wandsworth, and in some parts of Kent, within 20 miles of London, however, large fields are devoted to their culture. In some places stakes are used, but, as a rule, the points of the shoots are kept stopped, and the haulm is allowed to rest on the

ground. In some respects this latter practice is best, for the rows can be placed close together, and, moreover, the haulm shades the ground and keeps the soil moist, a condition essential to the growth of Scarlet Runners. A rich, light soil and an open situation is that usually chosen for them. Some plant a few rows in warm, sheltered places for early use, the seeds of which are sown in a temporary frame in April, and are transplanted from thence to the open ground as soon as the weather is warm enough to admit of it, but, as a rule, the seed is sown in drills in an open field about the first week in May. Ground previously occupied by Celery suits these Beans perfectly, the soil being deep, well worked, and rich. The seeds are sown in broad drills from 4 ft. to 8 ft. apart, according to whether the plants are to be staked or not. Two rows occupy each drill, and the plants when up are left from 4 in. to 6 in. apart each way, the thinnings being used to fill up gaps, should such occur. When the plants are fairly up a ridge of earth is drawn to each side of them to protect them in some measure from cutting winds and late frosts. When in full flower the points of the shoots are pinched off, an operation which causes the stem to branch out and grow dwarf. In gathering, the Beans are first put into sieves, which are carried to the end of the rows to be packed in bushel baskets; the latter are removed to the packing shed, where a little long Grass is placed over their tops, and kept in its place by means of Hazel rods; they are then placed in waggons and sent to market. Early in July Scarlet Runners appear in Covent Garden, and when that happens French Beans are not in so much demand as hitherto, the majority of vegetable consumers preferring Runners to French Beans. Some market gardeners sow successional crops for autumn use, but the bulk of the produce is brought to market in the end of July and throughout August. Their general culture is the same as that followed in the case of French Beans.

THE CABBAGE.—This is one of the most important of green vegetables, and although not considered by many so profitable as some others on account of its gross feeding character, it comes into use when there is little else to send to market, and often realises high prices. In the spring of the year many acres of Cabbages may be seen about Wandsworth, Fulham, Gunnersbury, and, in fact, all round the suburbs of London. The Cabbages sent to market in April, May, and June are the produce of seed sown early in August, and the plants are put out in September or early in October. Succession crops are sown in spring as soon as the weather is favourable. If sown too soon, as is sometimes done, the young leaves get injured by frosts, especially if these occur immediately after a period of mild weather.

The Enfield Market Cabbage is that which is principally used in the market gardens about London. It is one of the oldest in cultivation, and one of the best, and for this reason the growers generally save their own seed, and take great care that their plants of it are not crossed with other sorts. The sowing for the principal crop of this Cabbage is generally made between the end of July and the middle of August, on poor ground if possible, as in that case the plants come up stocky and hardy, and stand the winter well; whereas, if made on rich ground, a soft rank growth is produced, which is much more easily injured. This sowing is, as a rule, made in 4-ft.-wide beds—a width found to be convenient for weeding and hoeing amongst the plants. When sufficiently strong to be transplanted, they are planted on ground cleared of Onions or Potatoes, and a second batch is planted on land cleared of Celery, French Beans, or Vegetable Marrows. Every empty space, under fruit trees or elsewhere, is also planted with Cabbages. In planting, the ground is lined off into rows 30 in. apart, and in these the plants are put in 15 in.

asunder. Between every two rows first planted another is now put in with less care, thus making the plants stand 15 in. apart each way. Early in spring every alternate line of plants, and also every other plant in the lines or rows left, are lifted and sold as Coleworts. This allows the permanent crop plenty of room to come to maturity. With a view to subsequent plantations, which are made all through the winter wherever ground is vacant, the young plants in seed-beds are removed and pricked out into others a little further apart, in order to keep them in good condition for planting out as long as possible. In this way, indeed, many of the plants are kept till spring, when they are transplanted to succeed those planted out in autumn, and to come in before the produce of the spring sowings, made late in February or early in March, to furnish Cabbages from June to August. The plants from this sowing are put out in rows 2 ft. or 2½ ft. apart, and in the intervening spaces are put lines of Lettuces, a plant of which is also set between every Cabbage in the row. In May may be often noticed men busily engaged in tying up early Cabbages in the market gardens at Fulham and elsewhere. The operation is simple, just, in fact, that adopted in the case of Cos Lettuces. The succulent outer leaves are folded carefully around the heart or centre of the plant, and the whole is bound firmly with a withe or piece of bast. There are several good reasons for this practice. The centre being protected from the weather, the Cabbages heart sooner than they otherwise would do, and they are more easily handled in gathering and packing for market. Early Cabbages, the leaves of which are so brittle, would lose half their value if some precaution of this kind were not taken to keep them from being broken by loading and unloading them. Red Cabbages are sown in March, and the plants are put out in rows from 3½ ft. to 4 ft. apart, and the plants stand about 3 ft. asunder in the rows. As this crop stands until the heads are large and solid, a piece of rich land is devoted to it, and intercropped with Potatoes, ordinary Cabbages, Lettuces, French Beans, or other vegetables of that kind. The produce of the July sowing is generally considered better than that of spring.

COLEWORTS.—These are Cabbages pulled for market when about half grown, and for supplying such, every spare corner in market gardens is planted. As soon as fruit bushes have been cleared of their crops rows of Coleworts are planted between them; they are also planted under fruit trees, no matter how large the trees may be, and also between rows of Moss Roses. The space between Celery ridges is likewise generally planted with Coleworts, as is also that between Asparagus ridges, the edges of which, too, are often cropped with Coleworts. Between the rows of French and Runner Beans and late Savoy, the Colewort is also planted, and, in fact, like Lettuces, it is planted in every empty space where there is a probability of its growing. Whole fields, too, are sometimes cropped with it, and are cleared in good time for winter Radishes. Cock's Hardy Green Colewort more resembles an ordinary Cabbage than the Rosette, which is grown largely for market, and, being hardier, is sown a month or six weeks later, so as to form a succession to that sort. A sowing of the Rosette is usually made in May in beds in an open piece of ground; and, when up, the young plants are thinned with small hoes. The strongest plants are first selected for transplanting, and are put in chiefly as catch crops between other vegetables. For spring Coleworts, only the thinnings of the Fulham Cabbage are used. The Rosette is, perhaps, the greatest favourite in the market, its beautiful white heads, when bunched, having an attractive appearance; but, as regards quality, nobody would eat the Rosette who could get Cock's Hardy Green—i.e., if they were acquainted with the respective flavours of the two varieties. A kind

called Blue Colewort is largely grown for a November crop, as earlier in the year it is apt to "bolt." Coleworts are tied in bunches, packed in waggons, and sold in this way in market.

SAVOYS.—These are not so much esteemed as Cabbages, but they are largely cultivated by some growers. The seed is sown in March, and the plants are put out under trees or in similar positions in the same way as Cabbages. The varieties grown are the Dwarf Green Curled, Early Ulm, and Drumhead. Sometimes they are used as Coleworts when half grown, in which case they are planted thickly among other crops in any vacant places in the same way as Cabbage Coleworts. During winter when greens are scarce Savoys are most in demand. They are very hardy, and are all the better for being subjected to frost, and for this reason they are a good winter crop. The refuse of the seed beds are sometimes planted out in August to supply Coleworts in winter and spring.

BRUSSELS SPROUTS.—These are chiefly grown in market gardens as catch crops, under orchard trees, or between other vegetables. The seed is sown in April, and the plants, when large enough, are put out wherever a vacant piece of ground occurs. Market gardeners prefer Brussels Sprouts with medium-sized stems to those of rank growth, as from these they get harder and better Sprouts, which realise the most money in the market. In gathering Sprouts most market gardeners pull up the plants and cart them to the packing shed, where women divest the stalks of the Sprouts and pack them in $\frac{1}{2}$ bushel or bushel baskets, the largest and plumpest being always put on the top. The Cabbage-like tops are packed separately in large baskets. Some growers, however, pick the Sprouts from the plants as they grow and leave them to supply another crop. Brussel Sprouts when in the seed bed are often attacked by small white-winged flies, which congregate on the underside of the leaves and greatly injure the plants. In order to get rid of these, an old sack is nailed to two poles, about 6 in. being allowed to hang over one of the poles to act as a flapper. The sack, but not the flapper, is then tarred all over, and two men, one each side the seed bed, walk quickly along with the sack directly over the plants. The flapper drags over the plants and disturbs the flies, which fly upwards and get stuck to the tar. This operation several times repeated gets rid of the majority of the insects. C. W. S.

Early Mint.—On warm sunny beds in the shelter of a north hedge some of the market gardeners are gathering fine shoots of Mint for sauce and other culinary purposes. Such a position, both warm and still, in so far as it is unvisited by rude northerly and easterly winds, is as good as a cold frame. The beds are made light in the character of the soil, and above the ground level in September, after it has been deeply dug and well manured, and very early in the spring, the Mint peeps through the surface, and according to the weather so is the growth made. It is remarkable what a growth has been made despite the cold weather. Many put their Mint away in the coldest and shadiest parts of the garden, where it is certain to be late, and the few remarks made under the above heading show how this practice can be improved upon. A well-managed market garden supplies many valuable cultural hints.—R. D.

The Water-cress (*Nasturtium officinale*).—This is one of the most wholesome of our wild plants. It is useful in salads, as a relish at breakfast, tea, or supper; and as an esculent with salmon nothing surpasses it eaten with a little vinegar; but how completely is its cultivation neglected in this country, whilst tons of it are sent into Paris in the course of twelve months! But what one most regrets is the recklessness in operation amongst people—men, women, and children—who go to the clear purling brooks in the country to gather this Cress; their usual habit is to take out the fine, long, and strong stems, with their rootlets, &c., and leave them on the banks to wither and die, after having pinched off the young shoots. The stems should always be thrown back into the stream to reproduce

young shoots. I have known some, yet many, localities where this useful esculent used to grow in abundance, but whence it has been entirely destroyed by this carelessness. In pinching off the young shoots, two or three of the leaves nearest the stem should be left, because from the axils of these leaves the young shoots are produced. In gardens through which a clear stream meanders Water-cresses should be established, as they would become profitable to the possessor and a boon to the neighbourhood.—W. B. C.

PLATE CLXXXII.

BROWNEA MACROPHYLLA.

Drawn by MISS TRAVERS.

The genus *Brownea* consists of small evergreen trees belonging to the Leguminosae, and to that section having regular corollas. The species are peculiar to Venezuela, New Granada, and some portions of Central America, one of them being also found in Trinidad. The leaves are alternate, equally pinnate, and from 1 ft. to 1½ ft. long, with from four to twelve pairs of entire leaflets. The flowers are flame-coloured or crimson, and disposed in dense, sessile heads. It would be difficult to point out a more beautiful genus than this, and in few places are *Brownias* grown in such perfection as at Lakelands, Cork, the residence of Mr. W. H. Crawford. Here *B. macrophylla* bloomed for the first time in the United Kingdom, and only at two other places has it flowered in Europe. This is the third year in which it has produced its beautiful blossoms in succession at Lakelands, and this year its blooms, though retarded in their development, possibly by the severity of the winter, were produced when they did begin to expand in greater profusion than ever before, and were scattered all over the tree from within 1 in. of the ground to the extreme points of the young growth of last year, as many as eighteen of these gorgeous heads being in full beauty on one and the same day in April. Each blossom-head only lasts in beauty for a couple of days, the petals falling on the evening of the second day after expansion. Another variety named *B. latifolia*, nearly as handsome as the variety figured, but much slier to bloom, also flowers occasionally at Lakelands, as well as *B. grandiceps*, *B. ariza*, and *B. coccinea*, the latter comparatively small and insignificant in size though brilliant in colour, and of a deeper shade of scarlet. Mr. Crawford hoped to have bloomed a plant sent to him as *Brownea erecta* last summer, for the flowering of which he had been waiting patiently for many years, but when the tree bloomed it turned out not to be a *Brownea* at all, but *Talisia megaphylla*, a plant which bears myriads of small, fluffy white flowers on a candelabrum-like scape. W. E. G.

Camellias in Boxes.—"Cambrian" states (p. 414) that Camellias in boxes need little attention for many years, but I think they may be benefited by a root examination and fresh soil every third year. With this object in view my Camellia boxes are made so as to let down the sides, in order that fresh soil can be added, and the roots pruned at pleasure. A skilful carpenter will easily plan this when making the boxes.—BROCKHURST.

Anemone fulgens and its Varieties.—Messrs. Barr & Sugden have sent us flowers of a large variety of *Anemone fulgens*, ranging in shade from brilliant scarlet to a luminous crimson, and with the usual conspicuous black tuft in the centre, the flowers ranging in size from 4 in. to 5 in. in diameter. *Anemone fulgens* and its varieties will doubtless occupy a conspicuous place in our gardens now that they have become plentiful and comparatively cheap. This plant appears to afford considerable variety, and from seed it is probable that ere long we may have a section in which are some good representatives. The kind here alluded to is *A. fulgens grandiflora*. Then there is the typical *fulgens*, of uniform scarlet with black centre; then *fulgens annulata* and *fulgens oculata*. The form *annulata* is with from twenty to thirty petals in number, is also a very desirable kind. *A. f. annulata* and *A. f. oculata* are no doubt the single forms of the double Peacock *Anemone* so abundant at Cannes and elsewhere; at least, they are found flowering amongst the double ones, and if the petals of the double variety be carefully examined, the yellowish-white ring and eye can be distinguished. The inference may, therefore, fairly be drawn, that the double Peacock *Anemone* is a form of *A. fulgens*. In addition to *Anemone fulgens*, we understand there is a rose-coloured variety.

Dendrobium Dalhousianum.—We noticed a fine specimen of this beautiful but shy-flowering Orchid a few days since in the collection of Mr. A. C. Seearn, Radnor House, Twickenham, bearing a dozen spikes and over fifty flowers of large size and very distinct as regards colouring.—W. G.

GARDENING FOR THE WEEK.

Ferns.

Elegant as most Ferns are, still there are some that are very much more so than others. Of late years the fashion has usually been to give preference to the larger-growing species to the exclusion of many of the smaller kinds; but that is a mistake, inasmuch as where there is a preponderance of the strong-growing species, they occupy a good deal of room, proportionately reducing the accommodation available for a greater number of varieties to which more interest will be attached. So many charming and distinct kinds grown some years ago are now so seldom met with, that a short list may not be out of place. Amongst *Adiantums* the old *A. cuneatum* is such an established favourite, that it generally finds a place; indeed, there is scarcely an indifferent species in the whole family, but the following are particularly deserving of culture, viz., *A. caudatum*, *A. cultratum*, *A. excisum multifidum*, *A. pentadactylon*, *A. scabrum*, *A. tenerum*, *A. Veitchi*, *A. reniforme*, *A. scutum*, *A. Farleyense*, and *A. gracillimum*; the last two, especially *A. Farleyense*, do a great deal better grown much cooler than they usually are. *Aspleniums* of medium growth may consist of *A. Belangeri*, *A. bulbiferum*, *A. Hemionitis*, and *A. lucidum*, all of which are distinct and handsome. Most of the *Cheilanthes* are extremely elegant, especially *C. tenuifolia*, *C. lendigera*, *C. frigida*, *C. fragrans*, and *C. dealbata*. *Davallia Nova-Zelandica*, *D. immersa*, *D. bullata*, *D. dissecta*, and *D. canariense* are good; and of *Gymnogrammas*, select *G. tomentosa*, *G. lanata*, *G. rufa*, *G. tartarea*, *G. Mertensii*, *G. peruviana argyrophylla*, and *G. chrysophylla*. The elegant climbing *Lygodiums* are always desirable; amongst them *L. palmata*, *L. scandens*, *L. circinatum*, and *L. flexuosum* are all handsome. Amongst *Notholaenas*, which are nearly allied to *Cheilanthes*, may be named *N. Eckloniana*, *N. trichomanoides*, *N. vestita*, *N. sulphurea*, and *N. nivea*. Of *Polypodiums* I would recommend *P. appendiculatum*, *P. lingua*, *P. museifolium*, *P. plumosum*, and *P. subauriculatum*. Amongst *Pterises* the well-known *P. cretica* is one of the best greenhouse Ferns in existence, and all but hardy, and the same may be said of its variegated form *P. albo-lineata*; the old *P. serrulata* is a most useful kind for cutting, and amongst its many of the crested forms *P. serrulata* *Levyi*, *P. s. Dixoni*, and *P. s. corymbifera* are well worth growing; also *P. scaberula*, *Leucostegia immersa*, and *L. charophylla*. Many consider *Toddas* difficult to cultivate; but they are not so if kept sufficiently shaded and moist at the root in a moderately close, moist atmosphere and always cool; greenhouse temperature is quite sufficient for them. The best amongst them are *T. superba*, *T. intermedia*, *T. Wilkesiana*, and *T. Fraseri*. These are only some of the many comparatively small Ferns that are deserving of cultivation. I have not attempted to divide the greenhouse from the stove species, as, excepting the *Gymnogrammas*, all may with advantage be grown with less heat than that to which Ferns are often subjected.

Gleichenias.—These are of larger but not coarse growth, and even in the most select collections a few of the best *Gleichenias* should be grown; the most beautiful and distinct are *G. rupestris*, *G. Speluncei*, and *G. flabellata*.

Platyceriums.—*P. grande* is the finest of all; it requires a little more warmth and a closer atmosphere than the others. *P. Stemmaria* is also a handsome and interesting plant, although its shields are not of the evergreen character of those of *P. grande*. Grown as they often are on blocks of wood, with comparatively little matter for their roots to run in, *Platyceriums* require more atmospheric moisture, as well as more attention, in regard to watering than when in pots; but when cultivating them in pots I have found it best to invert the pot, securing it on to a stout piece of wood, acting as a plinth; I then knock the bottom (now uppermost) out, and while in this position fill the pot one-fourth full of drainage, the remainder being peat corks and a little sand, such as would suit the generality of Orchids. I set the plant on the top with its roots inside, and secure it with a couple of sticks inserted within the pot; the pot being upside down is more favourable to the development of the shields than if it were in its usual position. These *Platyceriums* must never be exposed to much sunshine, and on no account must they be allowed to get dry, and they must be kept scrupulously clear from thrips, which are very partial to them, and which must be destroyed by moderate fumigation, as when the growing fronds are affected with these insects they will not bear touching with the sponge, in fact so delicate are they when in a tender, growing state, that even a slight accidental rub with the hand will stop them from fully developing.

Orchids.

Treatment when in Flower.—Independently of the large general collections of Orchids that now exist in so many places, there

are large numbers who cultivate only a limited quantity of these plants, and in such establishments it frequently happens that the plants when in flower are set for a time in conservatories, halls, and other places, which, in addition to interfering materially with the season's growth, are calculated to do permanent injury to them. This especially happens in the case of the thick-rooted true air plants, a large portion of the active roots of which are above the soil and fully exposed to the air, and consequently independent of the more heat which they at all times require. They receive a check very much greater than species such as *Cattleyas*, *Oncidiums*, *Epidendrums*, and *Odontoglossums*, which possess an ability to stand a lower temperature with a drier atmosphere. I am led to make these remarks through frequently seeing *Acerides*, *Vandas*, and even *Phalenopsis* and *Saccolabiums*, placed when in flower in conservatories under such conditions. They may not sustain much harm in summer, but too much air and too dry an atmosphere not only completely stop active root development, but has a most injurious effect upon the older leaves, which soon begin to shrink, and, though the mischief may not be at once perceptible, generally ends in some turning yellow and prematurely falling off when the plants are returned to their growing quarters. Valuable Orchids should never be so employed, however desirable it may be to place them with a view of obviating this difficulty. It was having in a conservatory attached to a drawing-room, immediately opposite the glass doors of the latter, a movable structure in the form of a Fern case. It was 6 ft. in height, some 8 ft. or 9 ft. in length, and proportionally less in width. It was fitted up with dwarf Ferns and Lycopods in the bottom, and a few hanging baskets of Orchids suspended from the top; to this only just enough air was given to keep the flowers from spotting, and as much moisture was present as kept the plants from suffering through the atmosphere being too dry, and, except during the coldest time of the year, Orchids when in flower could thus arranged be seen with comfort, and that without any material check to the plants. *Cattleyas*, *Lælias*, *Dendrobies*, and many others requiring a moderate temperature could through the spring and summer months be allowed to stand there for the full length of time during which their flowers lasted without sustaining the slightest harm.

General Treatment.—In the different houses devoted to plants requiring different temperatures the growth of many should now be in full progress. Some species, especially *Phalenopsis*, when strong and vigorous, are so disposed to keep on blooming, that those who have newly commenced their cultivation frequently feel disinclined to curtail their flowering, and the result is that injury is often done to the plants through not giving them sufficient time wherein to make new growth, or, through the period when such growth is made being deferred till late in the season, when there is insufficient daylight to solidify the growth. For this purpose I should recommend flower-stems not being allowed to remain on the plants too long during the summer months, but to cut them away, which will have the effect of inducing the plants to make growth. This, as a matter of course, does not apply to the species *P. Luddemanniana*, which regularly produces young plants from the joints of the flower-spikes, neither does it refer to strong examples of other kinds where there may be a disposition to get them to form young plants from the lower joints towards the base of the bloom-stem, which they some times do when the leading portion is cut away. These, as well as *Vandas*, *Saccolabiums*, *Acerides*, and other heat-requiring species that have done flowering, should now be afforded a brisk temperature with no stint of air during the middle of the day, to dry and sweeten the atmosphere, charging it well with moisture for a time when the house is closed, avoiding too much heat in the night, keeping the plants well up to the glass, using no thicker blinds than are absolutely necessary to preserve the plants from injury, and making a point never to have them down unless there is sufficient sun to make it necessary.

Intermediate Heat-requiring Plants, or such as are often described as Mexican house subjects (a very bad term, considering that the temperature which plants from that country need has a wide range), should also be encouraged to make stout, well matured, but not hurried growth. The majority of *Cattleyas* and *Lælias* are much more impatient of water at the roots than the generality of other Orchids; they are unable to preserve their roots in a healthy condition if the material in which they are placed be kept nearly so wet as many other species from both the Eastern and Western Hemispheres absolutely require. Through an impression often prevailing amongst the inexperienced, that Orchids collectively when growing need to be kept wet, we frequently see *Cattleyas* and *Lælias* completely ruined through their roots rotting in quantity, and leaving the plants, so that they could hardly stand in the pots without being supported. I am now alluding to plants that are grown in pots in the usual material, and not to a few individual species that succeed best on blocks, or such as have not been very

long imported, and are being kept for a year or two until they get established on blocks suspended, with little moisture-holding matter about them; in the case of such as these it will be obvious that water must be given much oftener than when the roots are enveloped in a considerable body of moisture-holding material. Neither do the plants in this department require so much atmospheric moisture as the East Indian kinds; collectively, they will bear more air, and most of them will do with less shading.

Cool Orchids.—For the next two months or so the advantages of having a house less fully exposed to the direct action of the sun than when facing the south, or a span-roofed erection standing in the usual position, will be apparent, as most of the plants thrive better with less heat than is all but unavoidably present in houses thus under the influence of the sun, on which latter it will frequently be requisite to use blinds somewhat thicker than would be otherwise advisable, but where this becomes a necessity they must never be drawn down when they can be dispensed with. Such species as *Masdevallias* will now require a maximum of water, whilst *Odontoglossums* and allied species will need the material in which their roots are placed kept fairly moist, yet it should not be in that saturated state in which it is sometimes met. I have seen these plants, although making very large pseudo-bulbs and correspondingly ample foliage, with the latter so affected with spot from the over-moist condition of the roots, and stagnant atmosphere through inefficient air being given, that they became badly diseased. The plants here will be better for air, more or less, being admitted to the house night and day.—T. BAINES.

Flower Garden.

Auriculas.—Reference was made a fortnight ago to the length of time during which Auriculas had continued in flower this season; we are now in the last days of May, and still handfuls of Alpines may be gathered out-of-doors; and, unless the weather be very hot, we may do so up till midsummer. In all my experience I have never seen them so long in bloom. I receive letters from many quarters asking for information as to the treatment which the various sections require. Every week something has been written about them, and by referring to back numbers of THE GARDEN, the necessary information for each week will be found. There are numbers of seedling raisers who are also in want of information as to the best varieties from which to save seed. It is now too late to save seeds, but those who have any should sow it at once, and thus a season may be gained. Sow it in pots or pans, and in either case drain well, placing some Moss or fibre over the drainage, to prevent the compost from mixing with it. This is quite necessary, as the seeds will not all vegetate for a whole year. The soil should consist of sandy loam and leaf-mould, with sand added if necessary. Rake the compost quite level on the surface, and sow thinly, just covering the seeds with fine soil. The pots should be plunged in a very gentle bottom-heat and be covered with a Cucumber frame or hand-lift. With the warmer weather which we are now experiencing, considerable attention must be paid to watering and keeping green fly in check, for if it increases it will seriously cripple the plants.

Carnations and Picotees.—Plants of these in pots are now all in the open air, and, for the present, they require no more attention than seeing that they are freely supplied with water at the roots, that is, those plants that show by strong growth that there is also a corresponding root-action. A few varieties make but little growth, and, unless water be very judiciously supplied to them, they will speedily cease to exist. If the weather be very hot, let the plants be syringed freely at 5 p.m. Out-of-doors but little growth has been made so far, even in the most favoured districts as far south as London. From Bradford, and even in the south of Yorkshire, I hear that Carnations and Picotees have made no signs of "spindling," that is, throwing up their flower-stems. The surface of the beds should now be stirred, and a little fresh dressing applied; equal parts of loam and rotten manure answer well for this purpose.

Dahlias.—We shall not plant these out this year until the middle of June; the weather is fine at present, but it is impossible to say how long it may last. It is better to shift the plants into larger pots than to risk their being injured by cold winds, which check their growth and very materially retard the blooming, even if the flowers are not much injured thereby. When it is necessary to keep such plants for a long time in pots, they require all the more care as regards watering and seeing that they are freely exposed to air and light, and that there is sufficient space between the plants.

Pansies.—Those in beds are now flowering freely, and, as we expected, are making good growth. They are also strong and healthy. Last year we had a bed about 60 ft. long planted with seedlings of a good strain. That bed was a mass of bloom from May until the end of autumn, and was admired by all who saw it, some

going so far as to say that it was the best feature in the garden. The named varieties are cheap enough, and they grow as freely as seedlings. Plants in pots are more beautiful still, as regards the individual flowers, inasmuch as they can be protected from dashing rains; they require a good supply of water when the pots are full of roots.

Phloxes.—Amongst all tall growing hardy herbaceous plants, none are so effective as decorative objects in pots as these. They now require a good deal of attention. See that the stems are secured to sticks, and if the pots are well filled with roots, some rich dressing must be placed on the surface of the soil. Give plenty of water, never allowing the pots to become quite dry. I like to fully expose the plants to the sun, and if the pots are plunged in Cocoa-nut fibre refuse, or some similar material, less water will be required.

Pentstemons, Pyrethrums, Aquilegias, and several other hardy herbaceous plants do remarkably well in pots, and are all useful when in flower as decorative plants for the greenhouse. The treatment which they require is much the same as that described above for Phloxes.

Polyanthuses.—Those who have their plants still in pots would do well to place them out of doors in the open border. Turn them carefully out of their pots, and plant them without breaking the ball of earth. Ours are already well established, and are making an excellent growth, showing that they have laid hold of the rich new loam provided for them. Examine the leaves, and if they are infested with red spider, this pest must be destroyed, or else it will ruin the plants. I wash the leaves with soapy water. Green fly is also fond of the Polyanthus, and must be removed in the same way.—J. DOUGLAS.

Indoor Fruit Department.

Strawberries.—The last batches of these are now opening their blossoms, and as there is now no danger of their not setting, the weakest flowers may be picked off at once, leaving from eight to twelve of the best on each plant according to its strength. As soon as set they may at this season be given manure water daily, and on no account should they ever be allowed to get dry; such a check would render them an easy prey to red spider. Instead of saucers or turves on the shelves for the plants to root into, we have this year adopted the system long practised by some of using a second pot half filled with loam and droppings, and have reason to be more than satisfied with the result, never having had so good a supply of fruit before, not to mention the lessened labour as regards watering, and the convenience which the system affords for moving the plants from one house to another, as such has often to be done where there are not proper pits or houses for the purpose of Strawberry forcing. If the earliest forced plants have been carefully inured in cold pits to bear exposure, they may now be planted out for the purpose of producing early runners for next season's forcing.

Figs.—Established trees of these that are swelling off fruit require to be freely supplied with manure water, which may be continued till the first symptoms of ripening are observed, as also may syringing overhead and abundant air moisture. The border should be dressed 3 in. or 4 in. in thickness with half-rotted manure, which will not only benefit the roots, but will supply a valuable and necessary element to the air of the house. Let all fruit be exposed to light as much as possible, or both colour and flavour will be deficient. The tips of the shoots must be persistently pressed or pinched out, and leading shoots should be tied in, care being taken not to overcrowd. Any surplus second crop fruit may be rubbed off at once. Trees in pots from which the fruit has been gathered, after having been re-surfaced with rich compost, should be plunged in leaves to economise watering, and should be well washed with the syringe or garden engine night and morning. A night temperature of about 65° and 70° to 75° by day, with an increase by means of sun-heat, will soon tend to the production of a good second crop.

Peaches and Nectarines.—Without abundant sunshine fruit of these will neither colour well nor be very palatable, and therefore the change to brighter weather has been in every way most beneficial, more especially to fruit ripening, as that in all first early houses will now be doing. Although it is said that a Peach is not ripe till it falls from the tree, it is not wise to allow any to do so; on the contrary, examine them daily, gathering only those that part from the stalk with the slightest pull; they will then pack and travel safely, or keep in the fruit-room longer than they otherwise would do, and the flavour will be brisker than if the fruits were allowed to hang till they were over-ripe. As soon as the fruit is gathered, well wash the trees, thin out all new growths that are not required for next year's fruiting and tie in the others at such distances apart as will allow light and air to have full play on them. The borders should be well supplied with water and the trees be as regularly syringed as during the earlier stages of growth, in order to preserve the foliage good to the last, and then a good crop of fruit for another

year will be ensured. Succession-houses, in which heavy crops of fruit are swelling, should be afforded liberal supplies of tepid manure-water, and every leaf or shoot that overlaps the fruit should either be tied aside or taken off, and all lateral and sub-lateral growths should now be stopped by pinching out their points. In late houses tie down the shoots, remove surplus fruit before stoning, and syringe the trees twice daily.

Vines.—The improved state of the weather has already had a marvellous effect on Vines, more growth having been made during the last six days than in the previous eighteen, a circumstance which renders it difficult to keep pace with their requirements, as to thinning, stopping, and tying; such work, however, should never be delayed. The thinning of late Grapes should not be deferred a moment after they are ready, as growth goes on so rapidly that they soon get too large to admit of expeditious or neat thinning. The lateral growths on Lady Downes are now produced so rapidly, that unless repressed by stopping once a week they become a complete thicket, and when cut off a check to the Vines must necessarily be the result, and as a matter of course the crop is more or less injured. Houses in which the Grapes are commencing their second swelling should be shut up very early with an atmosphere well charged with moisture, and if the borders are inside well soak them with manure-water, and as this should be the last application of manure, it may be applied rather stronger than heretofore. Houses containing ripe fruit should be kept as cool as possible compatible with the preservation and health of the foliage. All lateral growth should be persistently stopped, but the leading shoot on each Vine should be allowed to ramble at will.—W. W.

Kitchen Garden.

Now that warmer weather has set in, vegetation is advancing rapidly, and the most persistent energy will now have to be exercised, in order to keep ahead of the work requiring to be done. Sowing seeds too thickly is one of the commonest errors in gardening, and if the result was only the waste of seed, that would not be of much importance; but when seedlings are neglected to be thinned till they have injuriously affected each other, and when the removal of the surplus plants destroys half the roots of the others, it will be seen how necessary it is to keep in advance of all such work. Parsnips, Early Carrots, Turnips, Leeks, and Onions are some of the seedlings that now need thinning, after which, deeply stir the soil between the rows, to induce a quicker and more vigorous growth. Peas suffer from over-seeding as much as anything with which I am acquainted. When the haulms are 2 in. or 3 in. apart they bear pods to the very bottom, which obviously would not be the case were they clustered together. Earth up and stake such as need support, and sow for succession such kinds as British Queen, Veitch's Perfection, and Champion of England. If sown in shallow trenches waterings and mulchings (both requisite in warm dry weather) will be the more effectual. The principal crop of Runner Beans should now be sown; 6 in. apart in the row will be quite near enough for these, and if the points be pinched out when 2 ft. high, that will ensure the production of pods from the very bottom of the haulm. Earth up Potatoes. If high culture be aimed at, strew between the rows guano or soot; stir deeply with a fork, and, after a good rain, earth up. The haulm should be thinned out to single or, at most, double shoots, and then, though the tubers may not be quite so numerous, they will be finer and of a more equable size. Top Broad Beans, in order to induce earlier formation of pods and to prevent an attack of black aphs, which invariably take possession of the tops of these whenever the season is favourable to their development. Unless Broad Beans be in special request, no more should be sown, as at the time when they would be ready there will be abundance of better vegetables. As ground becomes vacant, prepare and recrop it with Coleworts, Cauliflowers, Early Broccoli, Brussels Sprouts, and Savoys; the two latter will stand the severest winter, and should therefore be planted in quantity. Early Broccoli and Cauliflowers continue in use a limited time only, so these should be planted successionaly, and only in such numbers as will meet the demand. Globe Artichokes that have been raised from seed and grown on in frames may now be planted out in deeply enriched ground, and if the season be favourable, and they are not allowed to suffer from want of water, some few heads may be had in the autumn. Established plantations of Horse-radish, Seakale, and Rhubarb that are throwing up flower-stems should have them cut off and the ground receive its summer mulching of manure. Weeds may be kept down on Asparagus plots, and at the same time the roots benefited by an occasional light sprinkling of salt. Sow Lettuce where it is to stand, and thin out the plants to 9 in. apart. Tomatoes, ridge Cucumbers, and plants of similar hardiness may now be planted. During favourable weather keep the hoes going, in order to keep down weeds, which, now that rain has come, will grow apace.—W. W.

AMERICAN NOTES.

The Dewberry.—General Noble, of Bridgeport, asks, in the "Gardeners' Monthly," why so little attention is paid to the Dewberry. He speaks of the delicious Dewberries, or trailing Blackberries of Virginia, some of which he says are 1½ in. long.

Wistaria japonica.—Besides the purplish-blue variety, spoken of in Parson's Catalogue, we notice pink and white now growing in California. The racemes did not attain a length of much more than 1 ft., but they had not had time to fully recover from their journey from Japan. The fragrance is delicious, and attracts insects to an annoying extent.

Blue Gums in St. Joaquin County.—The Eucalyptus is beginning to be largely planted in this county along roadsides and in the form of groves. In gardens and city lots it is not here, any more than elsewhere, a satisfactory tree. We have also noticed that the trees were greatly affected by the frosts of last winter, in some cases hardly recovering.

Drying Raspberries.—A correspondent of the "New York Tribune" says there is no kind of dried fruit in such brisk demand in the market as Raspberries, and that it is quite as profitable to dry them as to sell them fresh. 100 quarts will make 30 lb., which, at 30 cents per lb., gives 9 cents per quart for the fresh fruit, less half a cent, the cost of drying. The Black Cap is here alluded to, which he states is the most hardy, reliable, and easily-grown of small fruits.

A Dwarf Cypress.—We lately observed, at the nurseries of Mr. West, Stockton, the most unique little tree imaginable. It is an accidental seedling from Cupressus macrocarpa, and a more compact, globular, neat-leaved dwarf Conifer we never saw. We have forgotten exactly the number of years which have passed over its head, and we fail to remember the exact number of inches it was in height—little enough certainly—but we are quite sure that it is worth propagating, and sending out as a good dwarf of California parentage.

Rose Hedges.—In the grounds of the State Insane Asylum in Stockton we saw some fine effects produced by various hedge plants. One of those hedges was formed of perpetual Roses trimmed close to a height of 2 ft., and, being full of leaves, buds, and blossoms in a perfect mass, is an entire success as a hedge. We should suggest that the alternating of red, white, and yellow, or the planting of opposite sides of a walk with different colours, would give a pleasing variety.

The Stockton Insecticide.—Mr. Milco, of Stockton, has, for some years past, been investigating the properties of Pyrethrum carneum, a plant largely used in Dalmatia for the manufacture of various insect preparations. Believing that there was room for the business, he introduced the plant some years ago, and, after many trials, and not a few tribulations, has, beyond a doubt, put his article on a sound financial basis. The preparation, which is made from the flowers, is called by a Dalmatian name, "Buhach" (pronounced Boobatch), and this title has been patented by Mr. Milco as a trade mark. The quality of this insecticide, made from fresh flowers, appears to be superior to that of any now in the market from foreign sources. Professor Hilgard has brought various comparative tests to bear upon it, and gives it his endorsement.

In the "Rural New Yorker" we find a plate and description of a New Quince, The Champion. This variety originated on the grounds of Mr. George Perry, Fairfield, Conn. It is of large size, and resembles in shape a Duchesse Pear. Its chief merit seems to be that it comes into bearing very early, and is very prolific.—California Horticulturist.

Early versus Late-flowering Magnolias.—Most people will acknowledge, if they will be frank in the matter, that they object to Chinese Magnolias, so-called on account of their peculiarity of blooming before the development of the leaves. We miss the foliage which attains such beauty later, and while we would not sacrifice the wonderful beauty of the flowers in early spring, we cannot help wishing that fine foliage might accompany such fine flowers. It is probably for this reason that the late-flowering Magnolias are so popular, notwithstanding the comparative inferiority of their bloom. That of *M. cordata* is yellow, of medium size, attractive, but not extraordinary in any way. The same may be said of *M. glauca*, except, perhaps, that it is sweet-scented, while the flower of *M. macrophylla* is noteworthy only for its large size. What we want is an attractive, sweet-scented, good-sized Magnolia flower that develops at the same time as the leaves. *M. hypoleuca* is such a species, as well as one other variety not yet named. Yet so few of even the first of these Magnolias have been offered to the trade that it is not strange that they are overlooked.

Abutilon insigne.—This is a fine variety of the *Abutilon* family, which, though old, is still quite rare, and deserves to be more generally grown. In a November number of *THE GARDEN* it is figured under the name of *Abutilon igneum*, but later on in December it is spoken of, in the same paper, under its proper name of *A. insigne*. As long ago as 1860 we had fine, large plants of this variety, which we had grown purposely for winter blooming, producing, as it does, large, pendulous clusters of velvety, crimson flowers, veined with dark maroon, in great profusion all winter long. Unlike any other variety, this throws its flowers well out from the foliage, each terminal shoot being literally loaded with perfect bells. The leaves are of a rich dark green, of thick texture, and prominently net-veined on the under side. This variety is quite distinct in leaf and flower from any other, and deserves to be in every good collection.—C. H. HOVEY.

The Best Time to Transplant Magnolias.—There exists a common impression even amongst experts that Magnolias should be transplanted as early as possible in the spring; experience, however, teaches just the contrary. In fact, a Magnolia should not be transplanted until the leaves begin to show signs of pushing, which, in the case of Chinese Magnolias, is while the flower is in full bloom. There is a sluggishness in the spongy texture of the Magnolia roots which, like that of the roots of evergreens, needs warning up before transplanting can be attempted with the greatest certainty of success.

MR. THOMAS HOGG in the "Gardeners' Monthly" explains to Professor Sargent the difference between "introduced" and "first introduced," and calls attention to the fact that *Cercidiphyllum* is spelt *Cercidiphyllum* in Miguel's *Flora Japonica*.—"Moore's Rural."

Trees and Shrubs for Lawns.—In selecting these the tendency to follow mere fancies, or to use only particular and favourite plants, must be kept in strict abeyance. Many and various plants should be employed intelligently. Hardy deciduous trees, shrubs, evergreens, herbaceous and bedding plants, in short, everything that conduces to the beauty of the lawn, must be united into one harmonious whole. Doubtless there are occasions when a mass of colour, obtained by using many plants of one kind, is desirable, but generally a variety of plants and methods of combination is more desirable. The eye thus never becomes satiated, and is ever renewing its pleasure. But what is the actual condition of lawn-planting as practised to-day in the case of myriads of small places throughout the country—places, moreover, that belong to intelligent people? The entire collection consists frequently of a few fruit trees in the background, an Elm, a Norway Spruce, an Arbor-vitæ hedge, with a bed of the glowing Coleus. All these plants, be it noticed, are of the most pronounced and coarsest type. They may be and are valuable in suitable positions or in other combinations, but are decidedly ill-fitted for the interior of a small place, both from the character of their beauty and their habit of excessive growth. We intend no disrespect for either of these varieties, many of their qualities being, in their own way, most admirable; but we do say that if other and good selections were made after studying parks or nurseries, fewer poor lawns would exist. Landscape gardening, or lawn-planting, seems very difficult to some, and is practically considered a myth by others. To one class we can only say, practise it yourself and difficulties will soon disappear; it has no arcana into which you cannot pierce. To the other we answer, lawn-planting exists, and has its æsthetic laws, just as taste in general has definite laws.—S. PARSONS, in "Scribner."

Effects of the Frost in Devon.—Plants that have stood out-of-doors for years here, such as *Veronicas*, *Euonymuses*, large *Fuchsias*, &c., in good situations, have this winter been killed to the ground. *Laurustinuses* are also much injured; young stock of them in the nursery have not had a green leaf left on them. Myrtles on the house walls too are quite bare, but are now breaking freely. *Rhododendron Dalhousianum* is much injured, and looks very badly when R. *cinnabarinum*, a coloured plate of which appeared in *THE GARDEN* a few months ago, is quite uninjured, and is again in full bloom; R. *Thomsoni* and R. *carpiocarpum* are also unharmed. Our large plants of *Dracena australis*, from 14 ft. to 15 ft. high, with clean stems from 9 ft. to 10 ft. in height, are not even browned; on the contrary, they are growing vigorously, and in the case of one of them several growths are bursting from the main stem; these unprotected were killed to the ground in 1866, and my neighbours have had theirs killed this year. I saved mine by well protecting their stems with straw bands, tightly and neatly bound round from the ground upwards as far as possible, and then I thatched with straight Wheat straw, in order to keep them quite dry, leaving all the dead under leaves on to protect the top of the straw. I treated two plants of *Dicksonia antarctica* in the same

way; their leaves were quite killed, but the larger of the two is unfolding healthy fronds, but the other, a much smaller plant, I fear will not start. They were planted within a few feet of each other. Both the Ferns and *Dracena* will repay the little trouble which it takes to protect them, as these and Palms give a place quite a tropical character. I protected *Chamarops Fortunei* in the same way, but probably it would have stood uninjured without that attention. One of the most beautiful shrubs now in flower here is *Pyrus* (*Malus*) *floribunda*, every plant of which in all sorts of places is loaded with blossom, which in the bud state is most beautiful. This *Pyrus* grows freely, and should be freely planted along with the best Thorns for ornamental effect. No Hawthorn here, yet in flower, a circumstance which shows the lateness of the season, as Hawthorns are generally in full bloom here the second week in May.—JOHN GARLAND, Killerton, Exeter.

THE FRUIT GARDEN.

GRAPES FROM EYES RAISED THE SAME YEAR.

THAT Vines can be induced to fruit the same year in which they are raised from eyes has often been proved, and the fact that they will do so is instructive, inasmuch as it shows the wonderful inclination which the Vine has to produce fruit, and its disposition to conform to varied treatment. But beyond this, as far as either my own experience goes and that of others who have tried the plan, it has nothing to recommend it, for the weight of fruit obtainable is too small compared with the length of time during which the Vines require room and attention. Take, for instance, a case where now houses have been erected, with no old home-grown Vines at hand to fill them. If the grower were to raise his own from eyes and have many more than he required, and if he were to fruit a portion in the way described, he would require a separate house or pit for the work, as it scarcely need be pointed out that the permanent Vines would want to have their growth matured and their leaves off by the time those in fruit had ripened their crop. If, instead of this, he were to buy fruiting Vines, so as to have double the number required for permanently occupying the space and fruit the super-numeraries, the extra weight of fruit obtainable in this way over fruiting from the current year's raised Vines would more than compensate for the cost. "J. S. W." is wrong in instancing what Mr. Hardie did, as regards ripening a crop before the close of the year in which the houses were completed and the Vines planted in April, because the Vines, instead of being raised that year from eyes, were, I believe, very strong ones of the previous year's growth. I have before me the account given at the time, which says the Vines (*Muscats*) were furnished by Messrs. James Dickson & Sons, Chester; they were cut down to within 3 ft. of the ground, and planted in April; they quickly reached the top of the house strong and healthy, some of them nearly 1 in. in diameter; the tops were then cut off, and all the laterals taken out; they then started again, and were allowed to carry an average of nine bunches each. This was thought at the time to be a great feat, but, without the slightest disposition to disparage, I fancy most Grape growers failed to see it, or to approve of young permanent Vines being so treated. Premature cropping is always condemned, but here it was carried out in a most exhausting form. Most likely this was one of the numerous instances that occur in which present exigencies demanded more consideration than the future; nevertheless, an equal result might have been obtained by other means. So far, however, as growing Grapes from Vines of the current year's raising is concerned, I cannot look upon it as anything more than a cultural curiosity, for the simple reason that a better return may be obtained in other ways.

T. BAINES.

—I remember well the circumstance referred to by "J. S. W." (p. 403) and also the interest created by Dr. Lindley's congratulatory remarks upon the subject. I also recollect a visit which I paid, in company with others, to the gardens in question, situated at Wells, in Norfolk, for the purpose of seeing these Vines at the following spring. Mr. Hardie had then left the place, and was, I believe, on his way to Egypt. That was, I think, about eighteen or nineteen years ago. The Vines were planted along the front of the house—a lean-to one—and trained up the rafters in the way usually followed in the case of permanent Vines, and the canes were of about average size and strength. The object had been to break the upper half of the rods, fruit them, and then prune the fruiting ends away, and break the lower portion for the following year. But the Vines had evidently not taken kindly to the treatment; for, although the first part of the system was carried out, the second part, at the time of our visit, looked very much like a failure. The truth is, we cannot eat our cake and keep it too. The conclusion to which we came, after comparing notes, was that it was not a system likely to become general,

and, in fact, there was nothing heard of the Vines at Wells afterwards; but if I understand "J. S. W.'s" previous communications, his remarks have applied more to pot culture than to permanent Vines, and it is obvious that the two are not on the same level. With high culture, it may be applied to the former with a fair amount of success, but high pressure work of this kind applied to Vines must destroy their permanent character.

E. HOBDAV.

PINCHING ORCHARD HOUSE TREES.

SOME of your readers who are amateur cultivators of orchard house trees may not be quite certain as to the proper lengths to which the shoots should be pinched. The accompanying illustration represents a sketch of a shoot from one of my forced trees—a Nectarine. The first pruning, I find from experience, should be at the fifth leaf, as a general rule; the sketch will, I think, sufficiently explain my meaning; it is intended as a guide for the practice of pot culture. My forcing house of trees in pots is now full of fruit well advanced. The weather which we have experienced during the past winter and spring, will, I hope, have convinced the most incredulous that, although Peach growing out-of-doors may have been carried to a pitch of perfection by our ancestors, it is a painful task to their posterity. Happily, the cold storms and nipping frosts are harmless to



Shoot of Nectarine pinched for the first time.

trees under glass, a luxury which we can enjoy. My trees both on trellises and in pots are crowded with fruit, and one house, twenty-five years old, is as productive as ever it was.

Sawbridgeworth.

T. FRANCIS RIVERS.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Artificial Heat for Vine Borders.—"J. S. W." objects (p. 358) to leaves as proof that good Grapes may be grown without the aid of fermenting materials on Vine borders, and yet he knows as well, or better than most people, that the size and condition of the foliage is the surest index as to the state of the Vines, which any one could furnish, and ought to be far more satisfactory than a bunch of unripe Grapes. If I had sent unripe fruit, "J. S. W." might have raised an objection to that; but if he requires additional proof of what I stated, I shall have much pleasure in bringing that forward later in the season. I may state that the Vines from which the leaves in question were cut are, and have always been, in an outside border, and are now about twenty years old. At one time I used to apply heat to the border, but I have long since given it up, as I was of opinion then, as I am now, that it is productive of more harm than good.—S. D.

—Inference to the remarks on this subject, permit me to suggest that those of your correspondents who give us their opinions should state: 1. How many years their Vines have been forced. 2. At what time the fruit is usually ripe. 3. The nature of the soil, whether light or heavy. For my own part, having had to supply Grapes in May during the last twelve years, I have found a moderate covering of warm manure and leaves applied to the roots very bene-

ficial, but I should be glad to dispense with the labour entailed thereby could I only get satisfactory evidence of its not being required. I would venture to suggest, however, that Vines that have not been forced for say three years, so as to have ripe Grapes in May, should not by any means be allowed as evidence in the matter, as Grapes ripe after that month cannot be called early in the true sense of the term. As to "S. D.'s" remarks (p. 373) on the Vines which produced the foliage which he sent for inspection, I do not see what bearing they have on the subject further than to show that his Vines produce fine foliage, which I admit is in some cases, not in all, associated with good fruit. However, to put the matter to a practical test, permit me to ask "S. D." to send up to THE GARDEN Office, during the month of June, two average bunches of Grapes from his Vines, and I will undertake to do the same from Vines that have been treated with artificial heat at the roots. I may mention, too, that the Vines from which my fruit will be cut have produced ripe Grapes in June during the last three years, and that they have been heavily cropped, a fact that can be attested by several of your readers.—H. J. C., *Grimston*.

—For nine long years have I always had manure and leaves to the depth of from 2½ ft. to 3 ft. thick on the border of my second early house, and also on the border of the Muscat house, and I kept them regularly turned to keep all sweet, and I have always been rewarded with good crops of fairly good Grapes; still, the bunches never came up to my standard, being loose and too long. Some, I know, will say, Oh, the wood was not ripe; but it was ripe and solid. I therefore this season altered my usual course, and merely protected the border with dry straw, and the result was a magnificent show of close, compact, but not little bunches now, May 9, thinned. I therefore feel certain that warm roots have a tendency to make bunches long and straggling, and I shall never again warm a Vine border, so much satisfied am I with the result in an opposite direction.—R. GILBERT, *Burghley*.

New Plan of Filling a House with Vines.—Mr. Baines has, he tells us, tried this plan more than once and failed, but that is no reason why others should fail also. If he will honour me with a call now, I will give him a chance of picking out this Vine from the others, if he can, by any excess of vigour at the top, and weakness at the bottom, or elsewhere, which he says are the results of the practice. Not only is this Vine equal to the others in the house as regards equalisation of vigour among the branches, and their regular distribution from top to bottom, but it is better than some of them. I will also show him a number of other Vines of different varieties that have been treated in the same way, but which have not such a length of rod, and to which the same remarks apply; and in the case of all the experiment has been going on for nine or ten years, a longer period, perhaps, than Mr. Baines' experiments extended over. As to the plan of cutting down Vines to the bottom wire the first year, and leaving a few feet of wood every year afterwards, I said it was the usual plan, and so it is, but I did not say it was the best plan under all circumstances, or recommended it. It may be slow for Mr. Baines, but if he will turn to my articles on the Vine in the early numbers of THE GARDEN he will there find as expeditious a method of raising and fruiting Vines recommended as he ever probably practised. It is a noticeable feature of Mr. Baines' Grape-growing experiments that he has more to say about his neighbours' than his own success, though it does not seem to be possible to suggest anything in connection with the subject that he has not tried and settled beyond all question, even so long ago that he only reveals his secrets when he finds they are no longer worth keeping. Will Mr. Baines state any one case, and where he has seen the system tried, and give particulars of the experiment?—J. SIMPSON.

The Apple Blossom.—In a large orchard in North Hants I observed the other day at least one-half of the Apple bloom as good as killed by frost ere it had expanded its petals; the style and the fruit germ were as black as one's hat. This orchard was situated in a dry, airy position, and considerably elevated. It may, however, turn out that such mischief is but local, as on returning home I examined the trees here, and found no trace of damage. It is worthy of note that Pear blossom is, within a short distance of the orchard in question, marvellously abundant and quite unharmed; indeed, whilst the Apple bloom is comparatively abundant, the Pear bloom is unusually so, and heavy crops may be looked for. In the metropolitan market gardens Black Currants are spoken of as being thin, but most other fruits are promising, although more than that it is not yet safe to predict.—A. D.

Vicomtesse Hericart de Thury Strawberry.—After seeing the grand examples of this Strawberry produced at Heckfield, where it is chiefly grown for forcing purposes, I am surprised to find that some still speak unfavourably of it. There it produces as fine fruit as President and of better flavour, and the crop is half as large again as that of President. Buffa Corno manure is incorporated

with the soil in which the Strawberries are grown, and another element of success is the securing of good early runners. In winter the plants are stored so that the balls do not get dry, and therefore they lose none of their roots, which they do in the dry-as-dust plan of wintering. The pots are plunged during winter in ashes or leaves, thus giving the roots some protection, but in other respects they are allowed to take their chance.—A. D.

NOTES OF THE WEEK.

Saxifraga Wallacei.—This handsome Saxifrage, to which we had occasion to refer last season when in flower, is now very attractive in several collections, notably those at Kew and in Messrs. Osborn & Sons' nursery at Fulham. It is apparently unknown in herbaria; hence its provisional name has not been authenticated nor its affinities explained, but it is, for horticultural purposes, very distinct from any other cultivated kind. It is in the way of the fine Algerian *S. Maweani*, and in our opinion, is much superior to it, as it is far more robust and less difficult to manage, besides being earlier, freer as regards flowering, and very easily propagated. In one point it differs from *S. Maweani*, viz., in not developing the small, round buds during the summer, which is such a marked characteristic of the latter kind, and which is very detrimental to it under culture, as it often gets thrown away as dead by the uninitiated.—W. G.

Cattleya Reineckiana.—We last week saw a flower of this extremely rare and charming Cattleya, from Sir Trevor Lawrence's collection, at Burford Lodge, Dorking. It belongs to the Mossie section. The individual bloom measured $\frac{7}{8}$ in. across; the sepals and petals are of great substance, and of the purest white. The higher part of the labellum at the point where it begins to unfold is suffused with lemon, below which is a large blotch of vivid purple, the margin being beautifully fringed. A few examples of the plant were introduced many years ago, but in such limited numbers, that comparatively few Orchid growers have seen it in bloom; and it was at one time supposed to be lost. We know of no species in this showy family that surpasses it in beauty.—P. G.

Petrea volubilis.—One of the greatest ornaments in the large conservatory in the Royal Botanic Gardens, Regent's Park, is this beautiful and now little-known climber, which is an old introduction from Vera Cruz. It ranks, without doubt, amongst the finest stove climbers which we possess, as it is easily grown and scarcely ever fails to produce a crop of delicate mauve, star-like blossoms, which hang in long racemes in graceful profusion, and continue in beauty for a considerable time. A coloured illustration of it appeared in *THE GARDEN*, Vol. XII., Plate LXXXII.—W.

Muscari paradoxum.—In the note given in our last issue (p. 424) we mentioned that the *Muscari* which we received from Colchester under this name was not the true plant, according to Mr. Baker. We are now asked to correct this statement, which is described as an error. This, however, we cannot do, as the plant sent to us is certainly not identical with *Muscari paradoxum* contributed to the Kew collection by Dr. Regel, which flowered for the first time last year, and which was authenticated at the time by Mr. Baker. The true plant is so well marked and distinct from any other cultivated species that it may be recognised at a glance; indeed, if we mistake not, it is still doubtful as to whether it is not generically distinct from the other species of *Muscari*. The specimen from Colchester is apparently identical with *M. compactum* of Baker, though the material is not at hand to enable us to settle the point; however, the same species we noticed a day or two since in the Kew collection flowering by the side of the true plant, having been recently contributed from a well-known nursery, and not yet revised. The following short description of the true *M. paradoxum* will suffice to distinguish it from others: Bulb larger than that of other kinds; leaves three, about 9 in. long, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. wide, quite erect, deeply channelled, and bright green; flower-stem 6 in. to 9 in. long, terminated by a dense raceme of small, oblong flowers, blue-black in colour, and exhaling a faint scent. It is a native of the Caucasus.—W. G.

Shrubs in Flower at Coombe Wood.—A fine feature just now in Messrs. Veitch & Son's nursery at Coombe Wood is the flowering specimens of Magnolias belonging to the deciduous group, especially the beautiful *M. Lenzii*, of which we gave a coloured illustration in *THE GARDEN* (Vol. IX., plate XXIV.). It is perfectly hardy and flowers very freely. It is not often that we meet with any Australian Proteae flowering in the open air in this country, but here may be seen fine examples of the pretty Rosemary-leaved *Grevillea* (*G. rosmarinifolia*) in full bloom. Its curious red flowers are borne profusely amidst the dense evergreen leaves, which are narrow and very rigid, and from 1 in. to 2 in. long. *Pyrus*

Maulei, figured in *THE GARDEN* (Vol. XIII., p. 390), is also beautifully in flower. The Coombe Wood specimens are dwarf in habit, and produce their orange-scarlet blossoms in abundance, succeeded by numerous bright orange and red fruits. *Daphne Cneorum*, though an old and well-known dwarf shrub, still ranks amongst the most beautiful of spring flowering plants. The deep rosy tint of the blossoms, the profusion with which they are produced, added to their delicious perfume, especially when planted in masses, render it a very desirable plant for every garden. With blossoms of a similar colour and equally as free flowering is the Glauco-leaved *Kalmia* (*K. glauca*), a very showy kind, well deserving of more extended culture both out-of-doors and for early forcing. *Polygala Chamæbuxus* is here quite at home and flowering profusely, though not so showy as its rose-coloured variety. The various species of *Ledum* will soon form an interesting feature, as well as the numerous masses of *Rhododendrons* which thrive so admirably at this nursery.—G.

Hardy Orchids at Kew.—In one of the open borders in the herbaceous ground the following species are now in flower, viz., *Serapias cordigera*, a beautiful South European kind, the blossoms of which have heart-shaped lips of a rich claret colour; *S. lingua* differs from this in having a tongue-shaped narrow lip, but it is similar in colour; *Ophrys Speculum* is a strikingly beautiful species, the lip of which shines like burnished steel, and is bordered with rich brown velvet; *O. araniifera* and *O. fusca* are also very singular but not prettily marked kinds; *Orchis provincialis*, with creamy-white blossoms copiously spotted with brown, is also very elegant. The various kinds of hardy *Cypripedium* are thriving vigorously, and the North American *C. pubescens* is already bearing handsome yellow-lipped blossoms.

New Masdevallia.—A *Masdevallia* of the *Chimara* group is now blooming in the York Nurseries. The flower measures 10 in. from tip to tip, ground colour very pale, nearly white, richly and heavily spotted all over with claret-purple. Each segment, especially at the margins, is shaggy, with rough coarse hairs, giving the flower a novel and extraordinary effect. The "tails" are deep purple. We understand that of this *Masdevallia* one plant only has yet been seen, and that a portion of it is to be offered for sale at Stevens' week (29th inst.). Professor Reichenbach, to whom a flower has been sent, provisionally names it *Masdevallia Backhousiana*.

A New Allium (*A. kurtataviense*).—This novelty from Turkistan is now in flower in the open borders at Kew, but it is not such a desirable plant as the figure given of it a short time since in Regel's "Gartenflora" would lead one to suppose, as the flowers are of a dull, livid purple tint, and not at all showy. It is, however, very beautiful in foliage, especially when the leaves first unfold, as they are from 2 in. to 4 in. broad, have several longitudinal ribs, and are of a deep glaucous-green colour, bordered with bright red. The whole plant does not exceed 9 in. in height.—W. G.

Alpinia nutans.—This remarkably handsome plant is now finely in flower in the Palm House, at Kew. It belongs to the now much neglected family of Scitamineæ. It is Canna-like in habit, has bold foliage and stems, from 6 ft. to 8 ft. high, terminating with drooping racemes of blossoms, which have much the appearance of those of an Orchid, being of firm waxy texture, whitish on the outside, and having a heart-shaped lip of a rich orange colour, heavily pencilled with orange-red.

New Hardy Rhododendron.—Mr. Luscombe has shown us a cut specimen of a beautiful seedling *Rhododendron*, the result of a cross, effected at Combe Royal, between *R. Fortunei* and *Thomsoni*. Its trusses of flowers, and also the individual blooms, are large and showy, the colour being a delicate rosy-pink, paler in the centre than at the edges or back of the flower. It has bloomed freely in Mr. Luscombe's garden in the open air.

Xanthoceras sorbifolia.—This lovely Chinese shrub will shortly be in flower in Messrs. Veitch & Son's nursery at Coombe Wood. An interesting fact in connection with it is that it has withstood the past winter with impunity, though quite unprotected and in rather a bleak position. It will be found well figured in *THE GARDEN* (Vol. VIII., p. 524), accompanied by an engraving of the fruit.—W.

Ochna multiflora.—We noticed a very remarkable stove shrub bearing the above name in one of the collections shown the other day at South Kensington by Mr. B. S. Williams, of Holloway, but whether it be correct with regard to its nomenclature or not we are unable at present to ascertain. The specimen in question was in a fruiting state, and the numerous clusters of pea-like fruits arranged in a circular manner on a fleshy bright red disc with the reflexed calyx segments of the same colour had a very pretty effect, especially when contrasted with the bright green foliage.—W.

GARDEN DESTROYERS.

THE LILAC MOTH.

(GRACILLARIA SYRINGELLA.)

This beautiful little insect, when in the caterpillar state, is often a great annoyance in gardens by spoiling the foliage of the Lilac bushes. The leaves, when attacked by them, wither and crumple up, which gives the bushes a most dismal appearance. The moths are very common and widely distributed; they make their first appearance in May, and lay their eggs on the young leaves of the Lilac as soon as the buds open; they may again be found in July and September, for there are three broods during the season. As soon as the eggs are hatched, the caterpillars make their way, sometimes several together, between the upper and lower skins of the leaves, and feed on the parenchyma or interior substance of the leaf,



Gracillaria syringella.

which soon withers and shrivels up. As soon as the caterpillars can obtain no more nourishment from the leaf, they reappear on the surface and move to other leaves. They then provide themselves with a shelter by rolling up a leaf, or by fastening two or three leaves together with silken threads; thus protected from the weather and many other enemies, they feed principally upon the upper surface of the leaves that surround them. They attain their full size in about a month, and then, leaving their habitations, let themselves down by threads in search of a suitable place where they can undergo their change to the chrysalis state. Having found a convenient position under a leaf, or in some crevice in the bark, they each spin a small oval cocoon round themselves, within which they become chrysalides. In this state the insects remain for ten days or a fortnight, when the moths emerge from the cocoon, and soon begin to lay their eggs, which are hatched in due course, and the second brood of caterpillars begin their work of destruction. This generation attains the perfect state in September. Again eggs are laid, but the transformations of this brood are not completed until the following spring, as the insects remain in the chrysalis state during the winter, the perfect insects appearing in May. The best way of

getting rid of this pest is to gather all the leaves which are attacked as soon as the injury is perceived, and to destroy them by burning or burying them; by this means the numbers in the following generations will be considerably diminished. The caterpillars suffer much from the attacks of ichneumon, who find them out even when they have made themselves most secure. The moths are so small, that they are very difficult to find; if in great numbers it might be worth while to shake the boughs occasionally, and capture any moths which are disturbed with an ordinary butterfly net, or they may be shaken into an open umbrella. This insect belongs to the group of moths called *Tinea*, which contains a large number (about 650) of British species. They are mostly very small; some, indeed, only measure 2-10ths of an inch across their wings when fully expanded. The colouring of these moths is often exceedingly brilliant, some appearing as if they were most richly gilded; their wings are all long and narrow, and are usually very deeply fringed; their antennae are long and delicate, and not toothed in any way; in some species they are very long, and are more than four times the length of the insect. The caterpillars of many species mine in the leaves of various plants; others form portable coverings of the substances on which they feed, which they carry with them. The moths whose caterpillars are the little grubs which do so much damage to furs and woollen articles belong to this family. The moths of the genus *Gracillaria* may generally be recognised when at rest by the very peculiar way in which they sit, with their heads very much raised. The Lilac moth measures about $\frac{1}{4}$ in. across the open wings (in the figure it is represented considerably magnified), which are very narrow in comparison with their length; the upper pair are brown, with several whitish markings and various streaks of brownish gold, and are deeply fringed; the lower wings are pale greyish-brown, with very deep fringes. The antennae are longish and very delicate. The caterpillar is about 2-10ths of an inch long, and is of a greenish-white colour with a darker head. The body is composed of twelve joints, and is furnished with seven pairs of legs; one pair on each of the first three, and on the sixth, seventh, eighth, and last joints. The cocoon is composed of whitish silk, and contains a brown chrysalis.

G. S. S.

SOCIETIES AND EXHIBITIONS.

CRYSTAL PALACE.

MAY 24.

At this the great summer exhibition held on Saturday last the principal features were some exquisite groups of Roses, a brilliant collection of Clematises from the Woking Nursery, showy groups of Azaleas, and the usual well-grown stove and greenhouse plants. Tuberos-rooted Begonias, too, were very attractive, and admirably exemplified what rapid strides have been made within the past few years in regard to the improvement of this showy class of plants. Miscellaneous plants were numerous and varied, and received their full share of attention, amongst the most noteworthy being tastefully arranged mixed groups from Messrs. B. S. Williams and Messrs. John Laing & Co., and a pretty group with umbrella fountain above in terra cotta from Messrs. Dick Radcliffe & Co., to all of which extra prizes were awarded.

First-class Certificates were awarded to the following new plants—

Adiantum Williamsi (Williams).—An elegant Fern from the mountains of Peru. It grows about 9 in. high, and has spreading fronds, the pinnules of which are membranous and of a bright green colour. A decided acquisition to our lists of greenhouse Ferns.

Cupania elegantissima (Williams).—A graceful plant about 1½ ft. high, with pinnate leaves of firm texture, resembling those of a Cycad. A useful decorative table plant.

Geonoma gracilis robusta (Williams).—As its varietal name implies, this Palm is more robust in growth than the type, and is also a graceful decorative plant of easy culture.

Croton Henryanum (Williams).—A variety of bold habit, with ovate leaves prettily mottled with green and creamy-yellow.

Sarracenia Williamsi (Williams).—An interesting hybrid partaking of the habit of *S. flava* and *S. purpurea*, with leaves from 9 in. to 12 in. high, erect, the lid of the pitcher-like leaves measuring about 3 in. across; light green in colour, veined with crimson, especially on the upper half of the leaves.

Croton Williamsi (Williams).—A handsome form of good habit and free growth, with large oblong leaves richly coloured with green and yellow, and streaked with crimson.

Begonia althæaeflora (Laing).—A beautiful double-flowered variety, with blossoms resembling those of a Hollyhock in miniature and of a red-cerise colour. A very desirable acquisition.

Begonia Maude Churchill (Laing).—A variety with richly-marked foliage, and large, roundish, orange-coloured flowers tinted on the outside. It is dwarf and very vigorous in habit.

Calceolaria Crystal Palace (Ford).—A remarkably fine variety, producing fine trusses and very large blossoms.

In addition to the foregoing, the following, which have received certificates elsewhere, and which have been previously described in our columns, also obtained first-class certificates, viz., *Comtesse H. de Choiseul* (Laing), *Marie Bonchet* (Laing), *J. H. Laing* (Laing), *Millaria formosa* (Boller), *M. filifera* (Boller).

Miscellaneous Plants.—A superb group of pot Roses from the Cheshunt Nurseries was a great source of attraction, and certainly the plants composing it were perfect models of cultural skill. A grand plant of Charles Lawson measured from 7 ft. to 8 ft. across, and was literally covered with deep rose blossoms of good form. Celine Forester was of similar dimensions, and equally well flowered. The other varieties were the blush-tinted *Souvenir d'un Ami*, *Madame de St. Joseph*, the deep, rich-coloured *Victor Verdier*, *Dr. Andry*, *Beauty of Waltham*, *Edward Morren*, and *Anna Alexieff*, all large, admirably grown, and well staged. The prizes offered in the class for eighteen only brought out one collection, and that was from the Slough Nurseries; it was arranged in two groups. The plants of which it consisted were not large, but many of them were well flowered, and deservedly much admired. The Azaleas formed a very prominent feature, the classes being numerous and well filled. The group of nine plants from amateurs, to which the first prize was awarded, was particularly fine, as the specimens were not only well flowered, but the flowers individually large. The other entries merited no comment, with the exception of a collection of eighteen plants from the Slough Nurseries, to which a first prize was awarded. The plants were not large in size, but the flowers were unusually large and highly coloured.

Stove and greenhouse plants were numerous, and comprised some remarkable examples of skilful culture, especially in the amateurs' class for nine, in the first prize group of which were fine plants of the yellow-flowered *Erica Cavendishi* and *E. depressa*, profusely flowered specimens of *Acrophyllum venosum*, the showy-looking *Statice profusa*, and a huge plant of *Ixora coccinea*, covered with large clusters of orange-scarlet blossoms. The next group in point of merit were large well-flowered specimens of Azaleas and a superb plant of *Imantophyllum miniatum*. The exhibits in the nurserymen's class were scarcely so good as we have seen, though the nine plants from the Kingston Nurseries comprised well-grown plants, most of which we noticed last week. In the first prize collection of six from amateurs, *Erica ventricosa*, *Epacris Eclipse*, *Azalea Perryana*, and *A. Iveryana* were prominent examples of good culture. Fine foliated plants were remarkably well shown, especially those from amateurs; the nine which gained the highest award comprised *Croton interruptum*, *C. variegatum*, *C. Wiesmanni*, *Gleichenia semivestita*, *Dasyliroth glaucum*, *Areca sapida*, *Latania borbonica*, and *Zamia Lehmanni*, all plants in good condition. The best plants in the second prize lot were *Dieffenbachia Bausei*, *Anthurium crystallinum*, *Croton variegatum*, and the prettily mottled-leaved *Spathiphyllum pictum*. In an extra prize collection were *Gymnogramma gigantea* in fine condition; *Alcoccia metallica*, and *Dieffenbachia picta*; the last of a size rarely seen and unusually vigorous. Heaths were badly represented in both classes, and merit no comment. *Dracenas* were shown numerous and in the form of good specimens, including besides many of the finest hybrids, the ornamental *D. Goldiana*, which makes an excellent exhibition plant.

Orchids were not numerous, but amongst them were a few excellent plants. A grand mass of *Phalenopsis grandiflora* with ten spikes of flowers was especially noteworthy; also *Vanda suavis* with eight spikes. The pretty *Dendrobium Falconeri*, well flowered, and the gorgeous *Cattleya Mendelli* were much admired.

Crotons were also numerous, but with the exception of the first prize collection they were not very remarkable. The former contained large and well-coloured plants of *C. volutum*, *Youngi*, *magesticum*, *trilobum*, *interruptum*, *multicolor*, *Cooperi*, *Hendersoni*, and *augustifolium*, of a size rarely seen at an exhibition.

Ferns were but scantily shown, there being but one entry in each class, and none of these were very noteworthy.

Begonias were shown in admirable condition and in the form of large specimens, especially the group from the Stanstead Park Nurseries, which gained the highest award. The best varieties amongst them were *Massange de Louvrex*, *Madame Oscar Lamarche*, *J. W. Farrand*, *Calyppo*, *Cleopatra*, *Baronne Hruby*, and *Thomas Bell*.

Pelargoniums were well shown, though not abundantly, those from the gardens at Reddes and the Slough Nurseries fully maintaining their supremacy.

Calceolarias were remarkably fine, and one variety in particular named *Crystal Palace*, to which a first-class certificate was awarded, was the finest that we have yet seen. Hardy flowers were, as usual, shown badly; the only collection staged came from the Tooting Nurseries, the best plants being *Dielytra spectabilis*, *Spiraea japonica*, *Narcissus Bulbocodium*, and *Iris nudicaulis*.

ROYAL HORTICULTURAL SOCIETY.

GRAND SUMMER EXHIBITION, MAY 27 to 30.

THIS, the most important meeting at South Kensington during the season, was opened on Tuesday last, and, notwithstanding the unpropitious state of the weather on the opening day, a numerous company visited the exhibition during the afternoon. The usual spacious tent and a supplementary one leading from it to the entrance of the Council-room were crowded with floral treasures, and at a glance we were at once convinced that in point of number and general excellence of the exhibits, they quite equalled those shown on former occasions, and their arrangement on the gracefully undulating surfaces under the large tent left nothing to be desired, as, viewed from any point, the effect was charmingly picturesque, though the absence of the usual central group was conspicuous, as hitherto it had been a prominent feature, but this desideratum on this occasion was apparently unavoidable.

First-class Certificates were awarded to the following plants:—

Fritillaria recurva (Elwes).—A species from California, and one of the most beautiful of all the cultivated kinds. Its stems grow from 8 in. to 9 in. high, and are terminated by several drooping bell-shaped blossoms, which have recurved segments varying in colour from pale reddish-orange to bright orange, copiously spotted in the inside with bright red in the finest varieties.

Cypripedium pubescens majus (Elwes).—A large-flowered form of this handsome hardy Lady's-slipper, and a very desirable acquisition for the bog garden and other damp places.

Amaryllis Lady Louisa Egerton (Speed).—A pretty variety bearing an umbel of large flowers having reflexed segments, bluish-white, heavily streaked with deep magenta.

Azalea pontica Graf Von Moran (Veitch).—A delicate blush-tinted variety, very similar in form to the singular kind called *narcissiflora*, to which we have previously referred.

Gloxinia Duke of Connaught (Veitch).—A pretty addition to dark crimson-flowered kinds, the blossoms of which are of good form, edged round the top with white.

Croton Evansianum (Veitch).—A handsome novelty, good in habit, and having bold foliage, somewhat trilobed in form, and richly variegated with yellow and crimson and various shades of green.

Azalea Madeline (Turner).—A first-rate variety, with flowers of fine form and large size, and pure white in colour, spotted with pale green, and remarkably free both in growth and flowering.

Besides these, several other novelties were exhibited, amongst which were *Primrose Cloth of Gold* (Carter), a sulphur-coloured double-flowered variety; *Magnolia Soulangiana nigra* (Veitch), a dark flowered form, with which were cut blooms of type for comparison; *Azalea mollis* Arthur de Warely (Veitch), a pretty bright yellow-flowered kind; *Dracena Laingi* (Veitch), a handsome table plant; *Pelargonium* Baroness Burdett Coutts (Sawyer); *Clematis Blushing Bride*, the double-flowered variety of *linguosa*, and *Begonia metallica* var. (Dixon).

A cultural commendation was awarded to *Dendrobium Falconeri*, and a couple of small plants in flower of the Nepalese Poppy (*Meconopsis nepalensis*) from Chiswick were highly commended.

The class for twelve new plants was represented by three exhibitors. The best came from Mr. Bull, who furnished a grand mass of *Dracena Goldiana*, fine plants of *D. Willsi*, *Dieffenbachia Shuttleworthi*, *Anthurium Veitchi*, a fine example of *Nephrolepis Duffi*, *Lomaria discolor* var. *bipinnatifida*, and *Croton roseo-pictum*; Cycads were represented by *Encephalartos Frederici-Guilielmi*, *Bowenia spectabilis* var. *serrulata*, *E. Hildebrandi*, and the elegant fine-leaved *Palm*, *Thrinax borborensis*, and a fine pan of the brilliant-flowered *Hæmaphysandra Kalmeyeri*, which quite enlivened the whole group. The next collection in order of merit came from Mr. Wills, who had good plants of *Croton Queen Victoria* and *C. Prince of Wales*, *Pritchardia grandis*, the graceful *Dracena Anerleyensis*, *D. terminalis* alba, *D. majestica*, small plants of *Nepenthes Courti*, *Acalypha mosiaca*, *Dieffenbachia Shuttleworthi*, and the novel-looking *Ficus Grelli serrulata*. Mr. Williams contributed a group containing well-grown plants of *Croton Prince of Wales*, *C. Williams*,

and *Microlepia hirta cristata*, and the elegant *Gleichenia dicarpa longipinnata*; also *Dracena superba* and *Cupania elegantissima*, the bright-flowered *Azaleas* Mrs. Carmichael, Prime Minister, and others. The prizes offered by Mr. Bull for plants sent out by him since 1876 brought forward three exhibitors in the amateurs' class, but the exhibits were but of ordinary size. The first prize group contained *Dracena Robinsoniana*, D. Goldieana, D. vivicans, and D. Rex, the graceful *Aralia filicifolia*, *Kentia Wendlandi*, and *Lomaria Dalgaimesia*, the prettily-variegated *Croton Williamsi*, C. Hendersoni, and *Dieffenbachia illinita*. The second prize collection included some of the preceding, in addition to *Gymnotheca Raddiana*, *Panax laciniatus*, *Pitcairnia platyphylla*, *Chamaedorea formosa*, *Davidsonia pruriens*, *Croton Disraeli*, and a crested form of *Pteris umbrosa*. The next in point of merit consisted of small examples of *Brahea filamentosa*, *Dracena amboynensis*, *Croton Rex*, *Macrozamia Mackenzii*, *Gymnogramma Mertensii* var. *Dobroydensis*, and others just mentioned. In the nurserymen's class there were two exhibitors; the best came from Mr. Williams, who had fine plants of *Croton Disraeli*, C. Williamsi, and *Dracena Rex*; also smaller plants of *Cibotium pruriens*, *Kentia Wendlandiana*, *Dieffenbachia Shuttleworthi*, *Dracena Robinsoniana*, *Calyptronoma Swartzii*, *Sadleria cyatheoides*, *Croton princeps*, and *Odontoglossum cirrhosum*. The other group was staged by Mr. Wills, which comprised *Gymnotheca Raddiana*, *Croton Challenger*, *Davidsonia pruriens*, *Croton Disraeli*, *Phenix rupicola*, *Lomaria Dalgaimesia*, *Encephalartos Hildebrandi*, in good plants; and smaller examples of *Dieffenbachia Chelsoni*, *Anthurium Veitchii*, *Panax laciniatus*, and a good pan of *Anectochilus concinnus*.

Roses.—Of these there was a fine display. Mr. Turner, who was first, furnished superb examples of *Celine Forestier*, *Charles Lawson*, Duke of Edinburgh, *Madame de St. Joseph*, and others scarcely less in size. The largest in Messrs. Paul & Son's collection were *Charles Lawson*, *Celine Forestier*, *Princess Mary of Cambridge*, and *Juno*, all of which were well-flowered and in vigorous health. The highest award in the class for twenty was also won by Messrs. Paul & Son, whose group contained several large and well-bloomed examples; Mr. C. Turner and Messrs. H. Lane & Son, of Great Berkhamstead, gained the other prizes respectively. The amateurs' class for six was better filled than we have hitherto seen it, three exhibitors having shown in it, and though the plants were somewhat small, they were examples of skilful culture, and well selected as to variety. From Messrs. Veitch's establishment came a splendid and numerous display of pot Roses, not for competition, including many of the newer varieties. These were interspersed with plants of Japanese Maples in rich variety, from the undivided-leaved kinds to the delicately-cut foliage of *Acer dissectum* and others, all varying in colour, from a pale yellowish-green to a deep coppery tinge. The effect of this arrangement was charming, as the graceful contour of the Maples relieved the formal appearance of the trained Roses, the gaudy tints of which were also toned down, as it were, by them. Cut blooms of Roses were also contributed from the Waltham Cross and Cheshunt Nurseries, from which latter came also a group of pot Roses, not for competition, all of which were much admired.

Miscellaneous Plants Arranged for General Effect.—In this class it need scarcely be mentioned that Mr. Wills was first. The arrangement of his group was strikingly effective, though it differed materially from that designed by him last year, and which was so much admired. It occupied a semi-circular position at the end of the tent, and consisted of a background of tall Palms, Tree Ferns, Cycads, &c., amongst which the elegant leaves of the tall *Cocos flexuosa* had a pleasing effect; from these the gentle slope on which the group was arranged was thickly carpeted with various kinds of plants, from the common Creeping Jenny to the choicest Orchids, but though arranged promiscuously, all harmonised with each other charmingly. A splendid plant of *Nepenthes Hookeri*, with dozens of its pendent pitchers, was raised in the centre. Immediately behind this was a fine plant of *Cocos Weddelliana*, whose graceful foliage admirably contrasted with that of *Phyllocladus Lindeni* and other Aroids, *Dracenas*, &c., the somewhat sombre foliage of which was relieved by an undergrowth of *Calceolarias*, *Pelargoniums*, *Gloxinias*, *Odontoglossum vexillarium*, O. Alexandre, and others all intermixed with such elegant subjects as *Adiantum gracillimum* and A. cuneatum, *Drosera binata*, with an edging of *Selaginella* to hide the pots. The next group in point of merit was that shown by Messrs. John Laing & Co., which consisted of well-grown *Azaleas*, *Caladiums*, *Begonias*, *Palms*, *Gloxinias*, &c. An extra prize was awarded to Mr. Aldous for a group of a somewhat novel character, consisting of small Ferns, *Palms*, *Deutzias*, *Lily of the Valley*, and *Spireas*, with a predominance of double white Stocks, all arranged on a dense sloping bank. The other groups, though well disposed and containing many choice subjects, require no comment, except that of Messrs. Veitch & Sons, whose small but excellent collection of new and rare plants was highly interesting and much admired. Amongst them a collection of

insectivorous plants claimed considerable attention, as did also a choice selection of Orchids, including the rare *Epidendrum syriacum*, *Dendrobium infundibulum*, D. Bensone, *Aerides Veitchii*, and others; also cut blooms of the quaint but beautiful hardy *Iris iberica*, plants of *Saxifraga pyramidalis*, and an *Azalea* named *Flambeau*, of a rich deep crimson. A grand bank of the finest varieties of *Clematis* was shown from the Woking Nurseries, and was deservedly much appreciated, as the plants composing it were models of high-class culture. A noticeable feature of this exhibition was some plants arranged in boxes for windows, a purpose for which they are admirably adapted and extremely effective, as their habit is so graceful and their colours so bright. A choice group of well-grown new and rare plants was shown by Mr. Williams in the long tent; it consisted of *Dracenas*, *Crotons*, *Palms*, and other fine-foliaged and flowering plants; also a very fine mass of *Coleus Kentish Fire*.

Fine-foliaged Plants.—The amateurs' class for these was well filled and the exhibits good. The first prize group consisted of a grand plant of *Cycas revoluta*, a highly-coloured and well-grown specimen of *Croton interruptum revolutum* and variegatum, huge examples of *Areca sapida*, *Latania borbonica*, *Zamia Lehmanni* and *Dasyliodon glaucum*. Fine examples of *Dieffenbachia Bausei*, *picta*, and *Croton variegatum* were conspicuous in the second prize group, and a grand mass of *Dieffenbachia picta* in that which was third. Ferns, which may be included in this class, were remarkably fine; indeed, some of the plants in the group which gained the highest award were of a size seldom seen, such as *Todea superba*, of which a plant over a yard through was shown; *Gleichenia microphylla*, G. Mendelli, and *Cibotium Schiedei*. The next in point of order consisted of fine plants of *Davallia Mooreana*, *Gleichenia glaucescens*, *microphylla*, *Cyathea dealbata*, and others. In the nurserymen's class for six there was but one exhibitor, whose plants were of high-class merit, comprising *Gleichenia rupestris*, *Spelunca*, a fine plant of *Adiantum Farleyense*, *Davallia Mooreana*, and *Alsophila excelsa*.

Azaleas.—The competitive classes for these were numerously represented both by amateurs and nurserymen; the best eight in the former being remarkably evenly matched, and perfect as regards profusion and size of blossoms. In the nurserymen's class for eight the highest award went to the group from the Slough Nurseries, the plants in which, though but of moderate size, bore very fine flowers in good variety and rich in colour. The open class for fifteen brought six competitors, but even the first prize collection contained only ordinary specimens.

Orchids.—These were both in point of numbers and cultural merit below the average of former years. The best in the class for ten came from Mr. B. S. Williams, who showed *Cattleya Mendelli* with eighteen blossoms; C. Mossie, with seventeen; *Masdevallia Lindeni*, with over three dozen; also fine examples of *Lelia purpurata*, *Cypripedium Swianium*, *Vanda suavis*, *Odontoglossum Pescatorei*, and others. The open class for fifteen was closely contested, the finest examples in the best group being *Dendrobium nobile*, a grand plant; *Cattleya Warneri*, *Masdevallia Harryana* and its brilliant coloured variety *Whitbourniana*; while in the second group the best were *Cattleya Mossie*, *Oncidium crispum* var. *grandiflorum*, *Dendrobium Wardianum*, and *Lelia purpurata*. In the class for a group of *Odontoglossums*, Mr. Bull was the only exhibitor. His collection, which was tastefully intermixed with *Adiantum gracillimum*, and others, with a background of *Palms*, *Cycads*, &c., consisted of well-flowered examples of *O. vexillarium* in rich variety; O. Pescatorei, O. Alexandrea, O. Andersonianum, O. citrosum, and others.

Stove and Greenhouse Plants were well shown. The best group of twelve in the nurserymen's class comprised capital examples of *Erica depressa*, *Pimelea*, *Hendersonia*, *Hedera fuchsoides*, *Aphelaxis macrantha purpurea*, and others. The same exhibitors were also first in the class for eight. The group which gained the highest award in the amateurs' class contained excellent plants of *Hedera tulipifera*, *Erica depressa*, *Azalea Ivoryana*, and A. Magnet. Heaths, as we have had occasion to remark at other exhibitions this season, were inferior to those shown in previous years, and the class contained but two entries.

Tuberous-rooted Begonias.—These were a source of much attraction, and were deservedly much admired, as perhaps never before have such excellent groups been staged, particularly those from the Stanstead Park Nurseries, in which they are made a speciality. Those to which the first prize was awarded included flowers with various shades of colour, from bright canary-yellow to the brightest vermillion. Amongst the most conspicuous varieties were J. W. Farrand, Marquis of Salisbury, Calypso, Princess of Wales, Princess of Denmark, and *Massange de Louvreux*, all excellent single-flowered kinds; the best of the doubles shown were *Paeoniiflora*, *Comtesse H. de Choiseul*, and M. Keteleer.

Gloxinias.—Of these the best came from the Annerley Nurseries, and amongst them were some extremely beautiful varieties remark-

able for their large size, good form, rich colouring, and position of the blossoms, which are neither too erect nor too horizontal, while the plants were compact and vigorous. The second prize collection was well named, and on the whole was good, as was also a collection from the Society's gardens at Chiswick.

Pelargoniums.—Both show and fancy varieties of these were, as usual, shown in grand style by Mr. James, of Redles, the plants being of large size and well flowered. This exhibitor occupied the first position in both classes, and Mr. C. Turner, of Slough, the second.

Hardy Flowers.—The best of these were *Narcissus Bulbocodium*, *Spirea japonica*, *Dielis spectabilis*, *Saxifraga Mawean*, *Pinguicula grandiflora*, fine masses of *Orchis maculata superba*, and the beautiful *Dianthus neglectus*. Cut blooms of hardy plants were also contributed. These included *Aponogeton distachyon*, *Pyrus floribunda*, *Caltha palustris* fl.-pl., and *Doronicum austriacum*. The second prize collection were *Spirea palmata*, *Pulmonaria virginica*, *Corydalis nobilis*, *Cypripedium spectabile*, Double Pheasant's-eye *Narcissus*, &c. Cut blooms of Pansies were contributed by two exhibitors, and contained some strikingly beautiful varieties, richly-coloured, of large size, and good in form. An interesting and beautiful group of hardy flowers was contributed from the Fulham Nurseries, not for competition, which received its full share of attention, as it contained many choice examples, both in Alpines and the larger-growing hardy plants.

Fruit.—This, on the whole, was inferior to that which we have seen here previously. Though the entries for Grapes were numerous, they contained no remarkable examples. The first prize for Black Hamburgs was awarded to well-coloured and fair-sized bunches, and scarcely inferior were those which gained the second award. White Muscats of Alexandria were but poorly shown, the three bunches in the competition for the second prize being disqualified, as they were Foster's Seedlings. Buckland Sweetwater was well shown. Pine-apples were poorly represented; the first prize in the class for two was withheld; the second was awarded to a pair of the Charlotte Rothschild variety. Pines shown singly were also inferior, with the exception of the Smooth Cayenne. Strawberries were shown by several exhibitors in fine condition. The best three dishes consisted of Sir Charles Napier, Sir Joseph Paxton, and President. The first prize for one dish was awarded to fine fruits of Sir Joseph Paxton. Peaches and Nectarines were represented by one dish of the former and two of the latter; but they were not very remarkable. Cherries were well shown from Lord Carington's garden; the class for two dishes consisted of fine fruits of Elton and Black Circassian; the latter variety was shown also in the class for one dish. Melons were abundant, and well grown. The first prize was awarded to Windsor Gem, the second to Hybrid Queen Emma, and Read's Scarlet Flesh took the third. Tomatoes were excellent, the dish to which the first prize was awarded being fine fruits of Improved Trophy.

Vegetables.—Two exhibitors staged collections of vegetables in two kinds, both very good, the best containing excellent examples of Improved Trophy Tomatoes, Asparagus, and Tender and True Cucumber. The prizes offered by Messrs. Sutton & Sons were not numerously competed, as the class for three varieties of Melons and three of Cucumbers was filled by only two exhibitors, whose collections were very fine. The prizes for six dishes of Peas ($\frac{1}{2}$ peck each) were not competed for.

Amongst the numerous miscellaneous contributions of horticultural structures, implements, and garden appliances, we noted, at the entrance to the large tent, the pretty Statuette Fountain in terra cotta, with Ferns and other plants elegantly arranged in rustic work of tufa; this was contributed by Messrs. Dick Radclyffe & Co. Among those which were arranged in the corridors and in the grounds, we noted the Patent Heat Regulators from Messrs. J. H. Crickley, Cheltenham, which is apparently a useful contrivance for regulating the distribution of heat through hot-water heating apparatus with great facility, and which was distinguished by a silver Banksian medal. A similar prize was awarded to Messrs. Foster & Pearson, Beeston, Notts, for samples of their Patent Slot Throttle Valve, and which was also commended for its simplicity. Messrs. Richardson & Co., Darlington, exhibited small models of planthouses, and erected a full-sized structure, with improved patent roof methods of ventilating, patent glazing, and samples of the French systems of shading. The same exhibitors also showed their Portable Glass Wall Tree Protectors, and several examples of Boilers. Boilers were also exhibited by Messrs. Smeaton & Co., Fulham. Mowing machines were shown by Messrs. Crowley & Co., Sheffield, with their Invincible; and Messrs. Ransomes, Sims, & Head, Norwich, their Automaton; and the Excelsior by Messrs. Waite, Burnell, Huggins, & Co., Upper Thames Street; and Messrs. T. Mackenzie & Sons, Holborn Viaduct, The President. Specimens of wirework came from Messrs. Thomas & Co., Edgware Road; and Rustic

Garden furniture, &c., from the Pankibanon Furnishing Ironmongery Company; and a like contribution from Mr. J. Caven Fox, South Kensington. Some examples of Woolford's Portable Water Tank, made of galvanised iron, were shown, a very useful appliance for plant houses where much watering is needed. Messrs. Blake & Mackenzie, Liverpool, showed numerous articles, including Tebb's Universal Flower Pots, Garden Labels, Insect Traps, Machines for filling seed packets, Celery Collars, and other things. Samples of "Florvita" were exhibited by the inventors, Messrs. Prentice Bros., Stowmarket, and a collection of Royal Polytechnic Barometers and Scientific Instruments came from Messrs. J. Davis, Newington Butts. Flower Boxes with movable sides were exhibited by Messrs. Whitburn & Young, the sides of which were decorated by the Xylographic Press. In addition to the above, in the miscellaneous class numerous and exquisite examples arranged in elegant designs of skeletonised fruits, flowers, and Fern fronds were exhibited in the council room by Mrs. K. B. Cussons, Southport, and Mrs. M. Hodgkins, Hyde Grove, Manchester, to whose collection was awarded a silver-gilt medal.

A list of the prizes awarded at both shows, of which the foregoing are reports, will be found in our advertisement columns.

ANSWERS TO CORRESPONDENTS.

Diseased Cucumbers.—Can you inform me what is the matter with my Cucumbers? Plants of them in an early frame crop luxuriated, and showed plenty of fruit 3 in. long by Easter. The young shoots then began to show a curly and broken appearance as if they had not the power of further development. The fruit also began to show in the morning a gummy exudation, as well as at some joints of the stalks. The soil they are in is the same as that in which Cucumbers grew and bore good crops last year. The beds were well prepared, bottom-heat good, and watering and airing have been carefully attended to. Young plants of Melons, Cucumbers, and Vegetable Marrows from both old and new seed are precisely in the same condition, and I do not know of any one who had young Cucumber plants from me in the same plight as myself.—A. G. [Your plants have caught the ordinary Cucumber disease, for the cure of which (see p. 412) Mr. Fish recommends warm and liberal treatment.]

Cattleya Flowers without Sheaths.—Mr. A. A. Thorn (p. 423) need have no misgivings about his plants of *Cattleya Trianae* that have produced flower-spikes without sheaths, a circumstance, no doubt, caused through the plants being young, and not having acquired sufficient strength. It is a very common occurrence, and is usually to be met with in the case of pseudo-bulbs that spring from others that have been too weak to flower. That this is correct is proved by the fact that these sheathless spikes rarely produce more than one bloom; that is, when they belong to the one-leaved section, of which C. Mossiae may be taken as the best-known example. The flowers drooping is caused by the absence of the scape to support the stalks; but, if they had been tied to small sticks, I have no doubt they would have lasted as long as the others. I have seen Cattleyas that have become weakened by any of the many causes that reduce them to such a condition—such as loss of roots, or in the case of the leading buds being eaten out by slugs—flowering in the way described; but, as soon as they regained strength, the disposition to do so disappeared.—T. BAINES.

Roses at Cannes.—When at Cannes lately I saw in the Jardin Mazelle a Rose with flowers somewhat resembling the common Dog Rose, but with larger and whiter petals and yellow stamens. It was freely covered with bloom, but was most remarkable for its rich evergreen foliage, resembling in colour and glossiness that of a Camellia. They informed me that it came from Japan, and was called Rosa alba Camellia. Is such a plant known in England? It makes a beautiful shrub.—J. THOMAS. [Doubtless the Ramanas Rose of Japan (Rosa rugosa alba), figured in Vol. IX., p. 452, of THE GARDEN.]

Seedling Pansies.—C. C.—Your seedling Pansies, which have been growing all the winter in open beds, and which are now flowering freely for some weeks, belong to a good strain, being rich and well varied in colour, and of good substance.

Books.—E. J. M.—"Greenhouses for the Many," 171, Fleet Street.

Names of Plants.—G. T.—1, Sedum, probably stoloniferum; 2, S. lydium; 3, S. brevifolium; 4, S. albaescens. Miss O.—1, Sedum pulchellum; 2, Saxifraga aizoides; 3, Trollius palustris; 4, Trollius repens.

Varities.—K. K.—Aquilegia canadensis. T. H. F.—Send them when in flower; plants cannot be named with any kind of certainty from leaves alone.

Questions.

Salt on Stone.—I would be glad if any of your readers, who are posted up in such matters, would kindly say if occasional dressings of salt to Yorkshire Flags, or other stone would permanently injure the stone. The stone in question is a flag, and is already discoloured from the prevalence of a minute lichen which grows on the flags, as well as from the deposition of "soot blacks," with which our atmosphere is always charged, and I noticed last summer that where a quantity of salt had been spilled on the stone in going over the wall, the stone was as thoroughly as if it had newly left the mason's chisel, and I thought of applying it more extensively if it would not damage the stone. Hitherto, the cleaning has been done by stone-rubbing, but the labour is great and only partly efficacious.—J. S. W.

International Horticultural Exhibition.—A meeting of horticulturists, convened by Mr. Wills, to consider the advisability of holding an International Exhibition next year, was held in the Albert Hall last Tuesday, at which, after some discussion, it was agreed that the committee which had previously been appointed should be asked to re-consider its decision, which was, that it is inexpedient to carry out such an exhibition during the ensuing year.

No. 394.]

SATURDAY, JUNE 7, 1879.

Vol. XV.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

M. ANDRÉ ON LANDSCAPE GARDENING.*

M. EDOUARD ANDRÉ's scientific and elaborate book on the art and science of practical and landscape gardening is a voluminous work of eight or nine hundred pages, prepared with all the usual severity of minute detail so common to our exact and painstaking neighbours across the English Channel. The work is divided into twelve chapters, and these are again divided and sub-divided in a manner most commendable and helpful for general reference. The author unites the two professions of architect and landscape gardener, and, judging from the work before us, he appears to be freely patronised in both capacities. It was hardly to be expected that the author would restrict himself to a narrow practical treatise on so tempting a subject. We are, therefore, furnished with an historical sketch of the gardens of antiquity and the general progress of garden art in Europe up to the present time, more especially as it relates to the condition of landscape gardening in France. The gardens of antiquity, so far as history enables us to judge, consisted exclusively of parallel and rectangular forms. There is much truth and some exaggeration in the statement made by high authority to the effect that wherever in the art of any country variety is made to predominate it may safely be inferred that art has long been cultivated in that country; and, on the other hand, wherever the love of uniformity prevails it may, with equal safety, be inferred that in that country people are but in the first stage of improvement. It is, of course, natural to believe that in the infancy of art, when the attention of mankind was first directed to works of design, forms should be selected capable of most strongly expressing the 'skill of the artist, and the surest mode of effecting this would be the adoption of designs expressive of uniformity. When, therefore, it began to be considered that a garden was an object capable of beauty and of conferring distinction on its owner, it was but reasonable to expect that the earlier efforts should be directed with a view to render the designs as unlike as possible to the natural scenery of the country around, and thus to display more forcibly the amount of labour and expense thus bestowed. It is an interesting fact that the history of antiquity records no single instance where this character of uniformity has been deviated from in any spot considered solely as a garden; nor till within the last couple of centuries or so does it appear to have been imagined that a garden was capable of any higher aim than that of utility and uniformity in design. So also, in process of time, when art had made some feeble progress, and garden decoration had begun to be employed, it was exclusively restricted to such objects as regular cascades, grottoes, and trees cut into the form of animals. So tenacious, indeed, are the habits of popular taste, that these and similar objects, such as vases, urns, statues, and the like, made of cheap and perishable material, are still held in estimation and valued as objects of decoration. Any or all of these may undoubtedly be employed in accordance with the purest taste; but it requires the hand of a master to deal satisfactorily with a matter so fraught with delicate difficulty. It is not too much to say

that many an English—and French garden, too—otherwise beautiful, are rendered hideous by the introduction of meretricious objects, such as commonplace vases and the like, supposed to be ornamental. The plea for this slight diversion is the fact that the matter in question is vital to all that is simple and pure in taste, and needs to be repeated again and again, in the hope that this most prominent and national blemish may disappear from both English and Continental gardens.

In the elaborate and thoroughly exhaustive work before us, the editor, as already stated, has divided his matter into twelve chapters, and the work is embellished with eleven coloured plates and 866 engravings. The latter are employed to illustrate and aid the more complete explanation of the letterpress, and the former as exemplifications of the style in which the author has carried out the eleven examples in question, consisting of public parks and private gardens. The minute and persistent exhibition of detail accompanying the illustrations of this work is a marvel of patient perseverance, and thoroughly characteristic of the exact and methodical habit of the French mind. But while we can thus speak with unmeasured satisfaction of the unsparing labour and care with which the detail and the general execution of the work has been carried out, we extremely regret that a work of such pretensions, and an author so sure to be followed, should possess such wide influence in the dissemination of a style of gardening so utterly faulty as most of his published plans portray. What we specially refer to is the singular monotonous uniformity of the lines of his roads and foot-paths; but most of all the deliberate indifference with which he treats one of the chief charms of garden landscape, namely, breadth of effect. Instead of seeking where he may quietly lead his roads and foot-ways amongst groups and near boundaries, they are made to cross and recross again and again what should be broad and undisturbed open lawn. As an example of this, see Plate IV., page 385. We utterly repudiate the idea that there is anything English in this style of monotonous circles, for it is an acknowledged creed in English landscape gardening that roads and foot-ways must ever be held subordinate to the requirements of utility, and never introduced except where necessity demands them; but, in looking at the finished plans in the book before us, it would seem as if the gardens had been made in order to provide the means for a display of roads and foot-paths.

We make these remarks with no other feeling than an earnest desire that the author, who has so much in his power for good or evil, may be induced to restrain the redundancy of his intensely artificial flowing lines, roads, and foot-ways, and study more the less artificial and more agreeable forms of Nature.

R. MARNOCK.

AMONG the many changes in France during recent years nothing is more striking than the improvements made in the public gardens of Paris. Not only have these been made on an extensive scale, but quite different from the old French style of landscape gardening, as illustrated at Fontainebleau, St. Cloud, Versailles, and other well-known gardens. This style, the old style, not only was the rule in France, but was adopted in many other royal gardens throughout Europe. Happily for the art of gardening, all the newer gardens in Paris have been arranged upon a totally different principle, and, as any impartial person must admit, with considerable taste and judgment. The large parks and the minor ones, the squares, and even the small "places" designed during the time of the Second Empire and up to the present day, have been formed with a view to the natural development of the trees and objects

* "L'Art des Jardins." *Traité Général de la Composition des Parcs et Jardins* par Edouard André. Paris: G. Masson, Éditeur.

contained therein, and not wholly forgetful of the repose, verdure, and variety desirable in such places.

The newer style has been adopted in all recent changes to the entire exclusion of the old formal one. The fact that a garden is formed in immediate proximity to buildings does not compel the designers to make it formal in obedience to any laws of association, of which we have all read in books on landscape gardening, and the result is that these little gardens in the heart of cities, and often against some of their great public buildings, have a charm of freshness which could never have been secured in any other way. I know of nothing in city gardening more instructive than one of those oases right close against some large church, or plunged, as it were, amid public buildings, or surrounded by lofty houses, the Grass bright and fresh, and the fine-leaved plants and the trees and other plants in abundant foliage and flower. These gardens were, I believe, originally based upon what used to be called in France the English style, but were marked by features which could hardly fail to be studied with advantage by any one interested in the subject from this side of the Channel. The novel features of such have often been described in *THE GARDEN*—their good, as well as what would seem their objectionable, features. With the formation of these gardens the author of the book under notice had much to do.

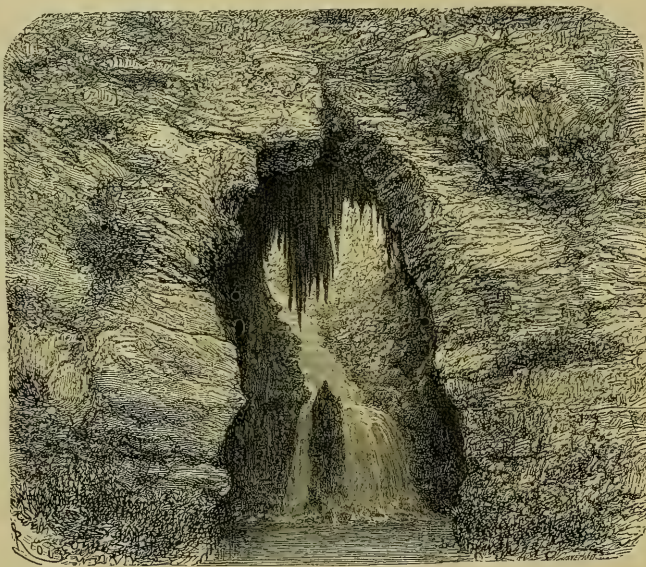
It was desirable that so marked an improvement should some day find expression in the literature of the subject, and now

M. André has stepped in and has thoroughly executed this part of the work. For a long time no important work on landscape gardening has appeared in France, or elsewhere that we know of, except the work of Alphaud, which is mainly the publication of the plans, sections, and details of all kinds of architectural work done in the public gardens of Paris. The present book is really an important step in advance in various ways, and therefore worthy of the attention of all students of landscape garden art. It is a general book on the subject much more than the illustration of the work of any particular school or period. Thus we have the usual illustrations and dissertations on the gardens of antiquity—the Villa of Pliny, &c.; the Middle Ages, and so on down to recent times, including a long account of English landscape gardening—a long chapter on æsthetics, one on the love for nature, the principles of garden composition, in

which the author begins to be useful in his drawings, sections, &c. This is, indeed, one of the best features in the book, viz., that it gives sections and small cuts showing the simplest implements, and practical details of operations such as have not been given in any other work of the kind. This idea is carried out even to the extent of giving minute details of every plantation in some of the places described.

The chapter on views is well worth reading, and M. André takes up the defence of old trees against those who cannot resist the temptation of destroying them without absolute necessity. He considers all such trees should be preserved so long as there is the slightest doubt as to the good that would result from their suppression. The artist, he considers, should make for them every sacrifice, and modify his plans so as to make the best use of their noble or picturesque forms. He may show his love for such trees by even preserving those already dead, and covering them with hardy

creeping plants, and he cannot too much study the full effects of cutting down fine trees before the hatchet is put to one of them. The hatchet, in a few instants, may destroy the work of many years. But we must not fall into the other excess. He very properly considers that no good work is possible in a woody district or situation without sacrificing trees if they are too thickly placed and are injuring each other in effect or health; if they hide beautiful views, if they cover a mound across which a view is desirable, or occupy the bot-



Artificial Rock Gardens: Stream Entering Stalactite Cave in Paris Park.

bottom of a ravine in which a carpet of turf may be required, if they cover a house or make it moist, their destruction should be decided upon, particularly in such cases as those in which fine trees generally remain.

An excellent feature of the book is the contrast of what the author considers good and bad forms. This he carries out in the case of plans, entrances, drives, water margins, and in various other ways to the great profit of the reader. M. André is a thorough student of the literature of the subject, and frequently illustrates the designs of others to explain his point. I notice, for example, a tracing of a good and well laid out English garden on page 394, and one of a most elaborate Continental one on page 396, the author justly pointing out the difference between them—except that it seems to us the absence of needless drives in a park need not by any means sacrifice the “promenade” in the park; nor the

contrary, that would seem to us to make it far more agreeable and not less extensive. Referring to the "wild garden," the author, says M. André, "preaches an introduction and naturalization in our woods and in shrubberies and masses in our parks of a great number of exotic species, of which a part only could resist, without reduction, the invasion of the natural vegetation." The fact is, that such is the number of vigorous hardy exotic plants, that destruction, through their aid, of the native vegetation would in many cases be quite possible if desirable. The whole northern temperate world is full of types of plants as vigorous, and even more vigorous, than our native ones, as, for example, the Golden Rods, Cow Parsnips, tall Mallows, Bupthalmum, Globe-flowers, Giant and Globe Thistles, Compass plants, and a host of other strong plants too numerous to mention, of the same type; while numbers of smaller plants are equally difficult of extermination if the situation in which they are placed be studied.

It is impossible in so short a notice to do justice to a book so full of interest, so well produced, and so practical. If we have any feeling of disappointment in the book, it is only that details are far more predominant in cuts and illustrations, than sketches of the best results attained. In this respect the book does not quite do justice to the best modern work in France and elsewhere. It would have been well to have given a large number of artistic illustrations, showing the breadth, variety, and picturesque of the best modern gardens, which many people cannot understand from plans. But this is perhaps asking what is not reasonable, as the book is most liberally illustrated (some of the woodcuts in which we reproduce), and, as usual with important French books, well printed.

W. R.

Woodland Wild Flowers.—The wild Scilla or Blue Bell is just now in great beauty, but even this is as late this season as other plants; last year I saw immense masses of it in full bloom in the first week in May, and now the end of the month is reached ere its full beauty can be seen. Not so common, but not less striking when seen in a mass, is the deep reddish-purple Orchis. Of this I saw a few days since in a meadow a large clump so fine as to elicit the warmest admiration. The spikes of bloom were some 6 in. or 7 in. in length, and quite perfect. By the water-sides the large yellow Caltha is even more striking than some of our garden varieties of the Globe flower. The purple Ajuga is here and there in flower, and the Lady's Smock as well as many others. It is now a good time to wander about the fields and hedgerows to gather wild flowers, but not to rob the country of their roots, as is often done, even in the case of plants that are scarce.—A. D.

THE FRUIT GARDEN.

WINTER PRUNING.

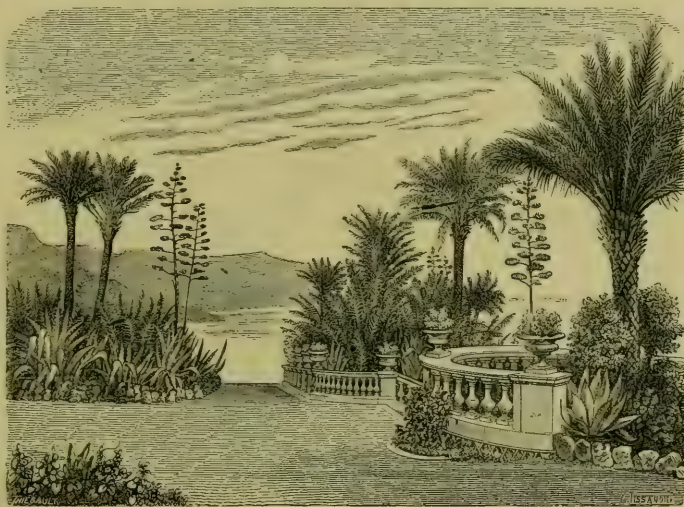
Pear Trees.—Winter pruning is performed when the sap of the Pear tree is at rest, except during severe frost. The operation may take place as soon as the last leaf has fallen, especially in the case of weak, old, and worn-out subjects. On the other hand, the pruning of subjects which show a strong tendency towards a luxuriant growth of leaves rather than towards a good show of fruit should be deferred until the sap begins to rise. There is no harm in pruning the same tree at different times of the year, the main branches in the autumn and the fruit-bearing branches in the spring. The amount of wood to be pruned away depends on the nature of the tree, on its strength and growth. For instance, we must prune less closely those subjects which are of vigorous growth, which produce but little fruit, and ramify freely, as well as those intended for large trees, or which have been grafted on free stocks. Generally speaking, we must prune less closely in cold climates than in warm, the locality, soil, aspect, and situation being taken into consideration. The principal branches of the tree should be left pretty long. On the other hand, the Pear grafted on the Quince should

be closely pruned, as well as those subjects which are intended to produce a large number of fruit-bearing shoots, a remark which will also apply to the topmost branches of the tree. Too frequent and too close pruning will injure a weak subject, while in the case of a vigorous tree its fruit-bearing capabilities will suffer severely; besides which, canker is almost sure to set in.

The direction in which the branch grows should govern the amount of pruning to be given to it. For instance, branches that are much inclined towards the horizontal should be sparingly pruned, while those which grow in a vertical position may be

thinned out with advantage to their neighbours. If we find ourselves under the necessity of pruning but slightly an upright branch belonging to a variety that ramifies but feebly, we may pinch off or cut with the pruning knife the two eyes nearest the top of the twig, at the same time cutting away a portion of the rim above the lowest eyes in the form of a horseshoe. This is especially necessary when the lower shoots exhibit a tendency to spread. These remarks apply more particularly to Beurré Hardy, Louise Bonne d'Avranches, and Fondante des Rois.

In closely pruning a branch whose tissues have become hardened we promote its growth, but in suffering a weak branch to grow untouched we frequently make it weaker than ever. In any case it is admitted that with these and a few more exceptions pruning closely injures a branch, while leaving it unpruned strengthens it. Is not an unpruned Pear tree growing in the open far stronger than another tree of the same age pruned into the shape of a spindle? A healthy, robust-looking branch, if it is shorter than its neighbours on the same bough, and if it ramifies freely, need not be pruned—for instance, in the case of the Beurré Six, Nouveau Poiteau, de l'Assomption, and Comte Lelieur. In these instances a longitudinal incision will facilitate the expansion of the bark and the spread of the sap. The shoot is pruned down to the eye, the eye being chosen on the upper part of the branch if it is weak, below if the tree is a pyramid, and level with the eye if it is grown en palmette as a cordon or as a



A Garden in the South of France.

candelabrum; in fact, in such a direction as to follow the main branch.

When the tree has once begun to bear fruit, we must adopt a system of moderate pruning, or at any rate prune closely and sparingly in alternate years. It is, however, only experience, and above all observation, which can guide the fruit grower in the application of these general rules, and of the exceptions to them. Pruning the fruit-bearing branches is much more simple. It is sufficient that they should not be allowed to crowd together so as to make confusion; that is to say, the spaces between them must be regular. They are either cut or broken to a length of from 6 in. to 8 in. The type of a fruit-bearing shoot is a twig or small branch of medium thickness, and of the length of from 6 in. to 8 in., the eyes or buds of which are successively transformed into fruit, and which may be kept in proper condition, renewed and regenerated, so to speak, by judicious pruning. The perfection of Pear-growing is to produce an average of ten good fruit per annum per yard run of the principal branches. The eye of the Pear tree generally takes two or three years before it is converted into a fruit-bearing shoot, but in certain varieties which come, like the William, Duchesse, and Beurré Clairgeau, to maturity with great precocity, we may have fruit at the end of a year. In these cases the Pear-grower should not allow the trees to bear too many fruit. Other varieties, like the Beurré Diel, the Bon Chrétien, and the St. Germain, throw out shoots from the base. In such cases heavy pruning must be avoided, and the production of fruit must be insured by means of slits cut in the bark where the latent eyes are beginning to show themselves, and by pinching off the buds at the end of the fruit-bearing shoots. The stiff, upright shoots which are to be found in the *Triomphe de Jodoigne*, the *Beurré d'Hardenpont*, and the *Bachelier*, fruit on the upper portion, and thus, thanks to the natural smoothness of the bark, they do not become wrinkled at the base. We must beware of twigs which are too short, and of simple fruit buds growing immediately on the stem, which are deprived of the resource of buds to replace them, such as the *Doyenné d'Automne* and *d'Hiver*, the *Beurré Gris*, the *Passé Crassane*, the *Passé Colmar*, which show them sometimes, but they die off after flowering only once. The shoots must be made the most of in the case of the most productive varieties, in which the terminal eye grows more naturally into a fruit-bearing twig, such as the *Crassane*, the *Maré Louise*, *Josephine de Malines*, *Urbaniste*, *de Tongue*, *Seigneur*, and *Bergamotte Esperen*.

Water shoots are cut down on the heel to the thickness of a five-shilling piece. Adventitious eyes will swell at the base, but if they grow too long they may be pinched down to a single one. Old fruit-bearing twigs and branches are maintained in proper condition by incisions and pruning down with the *sécateur* so as to diminish their length and check ramification. While the sap is in full vigour during the summer, the usual operations to be performed are budding, pinching, twisting or breaking off the green shoots, all of which have their importance in keeping up a proper balance between the main branches of the tree and the amount of fruit produced.

CHARLES BALLET.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Fruit Growing at Workop Manor.—Mr. Miller, Clumber (p. 372), will doubtless be pleased to hear that the Vines at Workop Manor, to which he alludes, are still in the very best condition. I was shown through the forcing and other houses on the 21st of last month, and I found the crops of fruit (in all stages) very satisfactory. Grapes were ripe and well coloured; of Eggs (Brown Ischia) there were heavy crops, and of Strawberries (of the James Veitch variety) there was a very fine display. Melons were ripe in quantities, of a useful size, about 3 lb., and finely netted; and Peaches and Nectarines, from ripe fruit down to the later varieties, were excellent. Mr. Miller, who is now at Clumber, thoroughly renovated the fruit department at Workop Manor before he left it, and, as will be seen, with excellent results.—J. JEFFERSON, *Workop*.

Grapes from Eyes Raised the same Year.—I am much obliged to Mr. Hobday for putting me right as regards Mr. Hardie's experiment in reference to this subject. I did not know, or had forgotten, that he contemplated fruiting the same Vines the following year, and which, I can quite believe, would have been too soon to expect a remunerative crop. I would only recommend the plan to be tried with pot Vines. In the same page (p. 440) objections are raised on the score of expense and accommodation in putting the plan into practice, which presupposes a conjunction of circumstances that are to a great extent imaginary. The crop secured by Mr. Henderson, of Thoresby, in this way did not cost a penny for extra accommodation, for the Vines were fruited on the side-shelves of the roomy Pine stoves there. As to my being in

error in saying that Mr. Hardie got a crop of Grapes from his Vines the same year in which they were raised from eyes or planted, I do not see it. My original statement (p. 325) was to the effect that Grapes were produced from the Vines of the same year, or "in nine or ten months after the eyes were put in." What Mr. Hardie did was to take a crop of Grapes, about the new year or a little later, from rods that were not in existence in April, or in less than ten months from the time the cane that bore them broke bad. As to not looking upon such a result as "anything more than a cultural curiosity," as Mr. Baines expresses it, I need only observe that most people would regard a crop of Grapes at the rate of nine bunches to the young rod as a rather acceptable curiosity about mid-winter or later.—J. S. W.

Rapid Pine Growing.—In reply to "E. C. P." (p. 420), allow me to say that the Pine plants were rootless suckers when planted out in the pit; the variety was the Smooth-leaved Cayenne. List 4 contains no mistake, but positive facts, and I may add that I have had frequently as good results during the many years that I have grown Pines.—M.

American Cranberry Farms.—One of the largest Cranberry farms in the world is known as Sackett's Marsh, near Berlin, Wisconsin. It comprises 750 acres of marsh, about one-fourth of which is under cultivation. The yield has sometimes reached 35,000 bushels.

AN AMATEUR'S GARDEN.

You have given us some excellent advice as to an amateur's greenhouse; can you not do the same about an amateur's garden? This is a difficult question to reply to, and any attempt to answer it must be made at a considerable rate of failure. When you have a greenhouse before you, when you know well its capabilities, and can tell your experiences with it for some years, it is very easy to advise in reference to it. No matter where it is erected, it is not affected by climatic influences in one place more than others; the same plants can be grown in it with nearly equal chance of success in the suburbs of a smoky town or in the pure air of the country village, but when one comes to write about a garden the whole thing is changed; gardens vary in size, character, situation, climate, soil, &c., in almost every item, and therefore the difficulty of giving advice is intensified. The tastes of their owners are multifarious, and in nothing, perhaps, is the old saying truer: *Tot homines totidem sententia*; and one has but the experience of one's own garden to show the truth of this, at one time having it on the top of a breezy cliff overhanging the sea, where nothing could grow, that once showed its head above the projecting fence, at another time in a lovely valley where Nature had done her best to make gardening a pleasure, but where a light sandy soil made it a difficulty; at another time in the back garden of a watering-place villa, not 40 ft. square, and then, again, in a piece simply fenced off from a field, and in all and under all circumstances having to contrive how economy could be practised in the carrying out of a favourite pursuit, the love for which has no way diminished as years have gone by, and one which, in times of sorrow especially, has ever been a comfort. Like angling, it affords time for reflection and communing with oneself, and to the overtaxed brain or overburdened heart there is in it ever a wellspring of comfort. It is not the worrying of exhibition, but the culture of plants, that ever gives a return for the care bestowed on them, that constitutes the pleasure of gardening.

In giving, therefore, any hints on the formation or keeping up of a garden, my own varied experience would hinder me from taking any one particular type as a pattern, but would rather lead me to put forward some general principles which may be applicable to all, and in the course of these few remarks I may, perhaps, state some things which may be of use, premising that I have in view those who do not employ a professional gardener, who work at it much themselves and superintend all.

The first point, I think, in entering on a new garden is to ascertain what is the character of the soil, and what plants suit it best. Educated gardeners are supposed to know all these things, but amateurs do not, and oftentimes make mistakes in consequence. Suppose any one like myself with a great love of American plants, as they are called, and seeing the gorgeous displays at Bagshot and other places, were to say I shall have a plantation of them; and have a garden or place on the chalk, we all know that the result must be failure; chalk is absolute poison to them, and much expense and trouble might have been saved had this been recognised. Again, on a stiff clay how hopeless it is to try and grow plants that require to root down deeply, and to be free from stagnant moisture, e.g., Lilies; you may dig out, fill in, and plant, but after all there will be failure; your Lilies will not grow, but dwindle away. Closely connected with soil is situation, and this has to be well considered. Thus in the

neighbourhood of a smoky town it is a real waste to try and grow Roses. They drag out a miserable existence, and are at the best poor half-starved things; and, indeed, this suitability or otherwise of soils goes a good deal further than some people imagine. Take, for example, Strawberries; it is not until you have tried that you find out which sorts will suit the soil, and then you have to adapt yourself to the circumstances.

My second piece of advice would be, do not attempt bedding-out or carpet gardening. I do not wage an indiscriminate warfare against these systems; there are some places where they are singularly appropriate. Our great public gardens are little frequented, except during the summer months, and then the gay and bright colouring of Pelargoniums, Calceolarias, Verbenas, and other bedding plants, or the neat geometrical patterns made of carpet plants are pleasing enough. The persons who look at them are passers-by, so to say; they are not amongst them continually, and hence their eyes do not get satiated with them, and the fine beds of Victoria Park or the sub-tropical

gardening of Battersea could not well be supplanted by any other kind. In the garden of the Luxembourg, at Paris, a part used to be filled with mixed borders, and, however interesting, it bore an unfavourable comparison with the Parc de Monceau, or other places where the bedding-out and sub-tropical gardening were carried out.

The same holds good, I think, with regard to the large country seats of our aristocracy. As a rule, during the spring and early summer months, the owners are away in London, and until Parliament is up they are not likely to be at home; to have then their gardens in a full blaze of colour is, no doubt, pleasing, and a herbaceous garden at that time would not present the same attractive appearance. The owners are only at home for a short time, and do not get tired of the gorgeous, albeit sameness, of colouring; but it is a different thing with the amateur, who has a small garden and limited means; if he carries out this system, then until June there is nothing to be seen in his garden but bare earth. The plants are bedded out in June; they grow on in July; are in their full beauty in August; and then their glory is departed—for two months, and the beauty of the garden for the rest of the year is sacrificed.

It is idle to talk of spring gardens; limited space and limited means forbid this. Then if he has a greenhouse the greater portion of it has to be utilised for the growth of bedding plants, to the exclusion of many things which he would like to have, but which he can find no room for. I would not, however, have the garden depend altogether on mixed borders of hardy plants, but would so arrange them that space should be left for a certain quantity of Pelargoniums and other plants, which, planted amongst the others, will brighten up the borders, and thus make them attractive throughout the whole year.

A third point on which I would insist very strongly is not to try delicate or doubtfully hardy things; there is such a large number of plants of great beauty which are perfectly hardy, that it is unwise to waste time, money, and patience on things which dwindle away and die. Many persons have been tempted to try plants which are said to be hardy, and are so in ordinary seasons, but which perish in severe frost, that it is well not to try them. Bearing in mind the locality in which the garden is situated, choose then your plants accordingly. Plants may be grown out-of-doors in Devonshire and Cornwall which would perish in Lincolnshire or Yorkshire, or will succeed in a high and airy situation, but would succumb to the damp

cold of a valley not far off. I have seen Laurustinus killed to the ground in a low situation, while on an elevated spot close by they have not had a leaf injured. Many know the way in which Violas and Pansies thrive in Scotland and the cooler parts of the island, but in the hotter and drier districts they do not thrive; and, thanks now to the skill of the horticulturists, and the enterprise of those who cater for the public, there is such a wide field to select from that no one need be at a loss.

I would also advise any one who really loves flowers to have, if space permits, a rockery; it need not be very elaborate, it must not be cockneyish. Consult "Alpine Flowers"; see in that little work what style is to be avoided and what to be followed; there is a large number of most lovely plants which are lost in a border, or get overgrown by more robust things, which flourish well on a rockery, and which in the earlier months of the year amply repay any care bestowed on them.

And lastly, let me give as a golden rule, endeavour after tidiness in all your garden arrangements; a garden overgrown with weeds, or littered about with things that ought to have been put out of the way, loses one half of its beauty. That it is in certain places and times difficult no one can question; country gardens are more apt to suffer from weeds than suburban ones. If the garden be not walled it is probably surrounded with fields and hedgerows, the seeds from which are disseminated far and wide, while in the neighbourhood of a town where every inch is utilised and most gardens are walled in, the same liability to suffer from one's neighbours does not exist; then there are times when it is impossible to get on the ground, and the soil is so wet that hand-weeding is equally difficult. In such cases all weeds will grow apace, and the garden of necessity becomes untidy; but it is a matter to be most diligently attended to, not merely for the injury the weeds do to the garden, but because of their unsightliness, and the hoe is one of those garden implements which ought never to be allowed to rust.

In these observations I have had flowers more especially in my mind, but I am not sure that the same rules do not equally apply to the kitchen garden, and, indeed, in some small gardens, flowers, fruit, and vegetables are so mixed up together, that it is impossible to lay down rules that do not apply to all alike. What I have said may appear truisms, and it may be asked what need to put such things on paper?

But my own experience is, that it is the overlooking of truisms that often conduces to failure, and that if writers would not imagine that those for whom they write know a great deal more than they really do, they would often write more effectively; and I cannot close these remarks without quoting the words of one who will ever be considered an authority on all he wrote about, the late Mr. Rivers, who concludes the preface to the tenth edition of his "Rose Amateur's Guide" thus: "A practical cultivator, in writing on cultivation, labours under a disadvantage; he almost obstinately supposes that every one would know something relative to these, with him every-day operations; he is apt, therefore, not to go sufficiently into detail." I have strenuously endeavoured to resist this feeling, and humbly trust what I have written on this subject or on any other will be found sufficiently explicit. If that be not so, I shall have much pleasure in supplying such further information as may be asked for in order to make the subject on which I write clear.

DELTA.



Rocky Stair-way in the Parc des Duttes-Chaumont. (See p. 447.)

EFFECTS OF LOCAL INFLUENCES ON GARDEN CULTURE.

I REGRET to see by Mr. Baines' note on this subject (p. 404) that so eminent a horticultural authority as he is should think that my "conjectures as to the cause of Mr. Tonks' failures will not bear the test of a moment's reflection." Neither Mr. Baines nor Mr. Tonks himself will, I suppose, venture to assert that vegetation even of the hardest description receives no injury from chlorous, nitrous, or sulphurous fumes. That whole districts are laid waste by these deleterious gases is a fact that is patent to everybody. It only remains for me to consider the question of their being carried to a sufficient distance to affect Mr. Tonks' flowers injuriously. If either of my opponents will refer to the Blue Book containing the Minutes of Evidence given before the Royal Commissioners appointed to investigate the working of the Alkali Acts (Parl. Papers, c. 2159—1—1878) they will find some terrible stories touching the effects of noxious fumes not merely on herbaceous vegetation, but on forest trees. They will find that sturdy subjects like Oaks, Pines, and Weeping Willows are seriously damaged, and in some cases killed outright, by these fumes at between six and seven miles from their source; that fruit and Rose trees are withered up in a very short time at the same distance; and that chlorous fumes have been detected in notable quantities in the air at ten miles from the delinquent factory. I could, if space permitted, fill half a number of THE GARDEN with similar histories related to the Commission by farmers, horticulturists, doctors, land surveyors, and other witnesses belonging to all grades of society. It thus being proved upon incontrovertible evidence that Oaks and Willows are killed by noxious fumes at six and seven miles off, is it not perfectly reasonable to suppose that Mr. Tonks' flowers at Packwood, which is about ten miles from Birmingham as the crow flies, might be seriously affected by these enemies of the horticulturist? I trust, therefore, that Mr. Baines will now allow that my conjectures are worthy of some consideration. My opponents will, no doubt, say that flowers are grown in perfection under the very chimneys that give forth the fumes. This is a fact that I am perfectly aware of, and, as I write, I have in my eye half-a-dozen different charming spots within reach of the worst parts of Tyneside, the Black Country, Widnes Dock, and similar localities. But what does this all prove? Not that Mr. Tonks' flowers and plants are not killed by noxious fumes, but that Mr. Baines, the managers of the Birmingham Botanical Society, Mr. Tomkins, and a host of their fellow-workers are possessed of sufficient skill, patience, knowledge, and, above all, lengthened local experience to grow plants in spite of the action of these deleterious agents. Such being the case, Mr. Tonks has every reason to hope that the evils from which he is suffering are to be remedied. If, as I always have supposed, and still suppose, the fumes from the Black Country are the cause of his failure, he may surely take heart in the fact that, with proper experience and skill, plants may be and are growing in the very thick of the vapours whose bad effects he must only feel in a greatly weakened form.

C. W. QUIN.

THE WINTER IN DORSET.

FROM this exposed situation—731 ft. above the sea—we are glad to be able to record few losses from the effects of the late exceptionally severe winter. Amongst climbers, *Passiflora corallina* is killed to the ground, but is springing from the root; *Escallonia macrantha*, *Bigonia radicans*, *Aristolochia Siphon*, and different kinds of *Clematis* are quite uninjured. *Ceanothus azureus*, *Jasminum revolutum*, and *Lonicera sempervirens* were only slightly cut by frost and keen winds. Lilies of various kinds have never looked better. *Crimum capense*, without even the protection of ashes, is growing well. Liums, such as *narbonense*, *salsoloides*, *alpinum*, and *flavum*, though late, are now shooting strongly. *Cyclamen europæum* has fared badly, every plant killed; as are also *Nierembergia rivularis* and *Eryngium elaeagnifolium*. *Primula denticulata*, *purpurea*, *pulcherrima*, and *luteola*; *Epimedium colchicum*, *Veronica*, and herbaceous plants generally are looking healthy. *Tupa Feuille* is pushing strongly, and has been out of doors, with only the protection of ashes over the roots in winter, for several seasons; it bloomed with us last year for the first time. *Echium fastuosum*, in a border, though carefully matted, has been killed, but plants of it have stood in a greenhouse with impunity where *Callas* were severely injured by one night's intense frost. *Aquilegia* (*chrysantha*, *corulea*, *glandulosa*, &c.) have proved very hardy. On the whole, we congratulate ourselves here on the greater hardiness of plants in this high and dry climate, though their growth may be less luxuriant than in warmer and more sheltered places. Common Laurels have not suffered at all, though the *Laurostinus* has been injured to some extent. At present, also, the prospect for wall-fruit is promising. The bloom, though remarkably late, has been unusually fine.

Ashmore.

K. L. DAVIDSON.

Rabbit-proof Plants.—In one of the earlier numbers of THE GARDEN I gave a list of herbaceous plants and shrubs which ample experiment had shown me to be practically rabbit-proof, and further experience has not given cause to diminish or materially to increase that list. "M. C. D." (p. 416) gives a list, in which he includes Hollies and Laburnums. Now, I have seen repeatedly Hollies more than 3 ft. in circumference, and Laburnums of equal size, gnawed and destroyed. Privets also are liable to be eaten. Plants of the bulbous type are rarely eaten, except the Crocus, which has not a chance; the others, i.e., Lilies, Irises, Tulips, Tritomas, Lily of the Valley, Butcher's Broom, Solomon's Seal, Narcissi, Asphodels, Leucojums, Snowdrops, &c., are perfectly safe. So are the Arum family and most of the Rose tribe, e.g., *Spiræa*, *Potentilla*, &c. Heaths, Rhododendrons, and Azaleas may be safely planted, though the latter are sometimes cut a little at first till the rabbits find out what they are. Of the Primroses, *P. japonica* is quite rabbit-proof and a noble plant for woodlands. Varieties of *P. acaulis* (veris) are safe, except the large-flowered *Polyanthuses*. Auriculas are greedily eaten. There are many rabbit-proof subjects among the Ranunculaceæ family, such as *Clematis*, *Columbine*, several *Anemones*, *Monkshood*, *Larkspur*, *Globe-flower*, and *Winter Aconite*. Hepaticas are eaten up directly, more's the pity, for they would grow as readily in our woods as in Switzerland. The *Hypericums* and *Peonies* are excellent things to plant out, and rabbits do not touch them. Your correspondent mentions *Cupressus Lawsoniana* and *Epimedium*, but they both suffer here; and of the *Hellebores* the best, the Christmas Rose, is destroyed at once.—SALMONCEPS.

PROPAGATING.

THE PROPAGATION OF BEDDING PLANTS FOR STOCK.

It may seem premature to refer to this matter now, but some things are much easier and better struck late in spring before the heat in the propagating bed has altogether declined. The cuttings will strike now easily, and such things as *Coleus*, *Iresine*, and *Alternanthera*, put in hand-sized shallow boxes, and after they are rooted if placed out of doors in some corner, the growth will be hard and firm, and will pass through the winter safely with a less expenditure for fuel than if all the propagating is delayed till summer or autumn. The variegated *Mesembryanthemum* is best propagated now, and it is difficult to get up a large stock of *Lobelia* from cuttings taken in autumn, and lifting and potting the old plants in autumn or *Mesembryanthemum*, that, if not well established, are apt to damp off in a cool house in winter, and now every bit will strike, and it will be very pleasant, when the propagating season comes round next February, to have a good stock of healthy plants to work from.

E. HOBDAY.

Royal Horticultural Society.—We are requested to state that the special prizes offered by Messrs. Hooper & Co., John Laing & Co., Jas. Carter & Co., and Sutton & Sons, will be competed for on July 8 instead of June 24, as formerly announced. We have also been informed by Messrs. Sutton & Sons that as there was no competition for six dishes of Peas on May 27, the same prizes will be offered by them on July 8, and that the restriction as to the varieties will be withdrawn. The prizes offered by Messrs. Jas. Carter & Co. for vegetables and Peas have also been deferred until July 8.

Monstrous Pelargonium.—We have received from Mr. R. Gilbert, of Bunchley, a remarkable monstrosity in the shape of a semi-double flowering Pelargonium. From the primary truss of flowers, which is large, have sprung a dozen or more secondary trusses, the whole making a huge pyramidal cluster 11 in. wide at the base and 7 in. high, a strikingly effective head of flowers being the result.

THE INDOOR GARDEN.

A NEW SARCOCHILUS.

Our illustration represents one of the most distinct of Australian Orchids, belonging to a genus of which but few known species are handsome enough to secure a permanent position in our gardens. It was introduced by Messrs. Veitch about two years ago, and is named in honour of a zealous Orchidist, Mr. Fitzgerald, whose beautiful work on the Orchids of Australia is now in course of publication. This gentleman collected no fewer than sixty-two species of Orchids within a mile radius of Sydney, the capital of New South Wales, and his observations on the means by which some of the species are naturally fertilised by insect agency are largely quoted by Darwin in his "Fertilisation of Orchids." The genus *Sarcochilus* was founded by R. Brown, and comprises a few Australian, Fijean, and Malayan Epiphytes "with short stems, narrow distichous, leathery leaves, and bracteated spikes or racemes of fleshy open and sometimes showy flowers." The lip is three lobed, and the central division is peculiarly short, thick, and fleshy, and from this character the generic name is derived. The species here illustrated is of neat habit. It grows and blooms well in the Veitchian collection, planted in a fresh compost of peat, sphagnum, and crocks, the whole placed in a small Teak-wood basket, and suspended near the glass in an intermediate house. As, in the case of other true Epiphytes, its thick roots seem to enjoy exposure to the diffused light in a humid atmosphere and moderately warm temperature. In order to cultivate it successfully, it must on no account be over potted, a very little fibrous compost in the smallest of Teak-wood baskets being amply sufficient for its requirements, and under these circumstances it makes a vigorous and healthy root growth, stout foliage, and produces spikes 1 ft. in length, bearing from ten to fifteen flowers. The flowers of different plants as imported vary in size and markings, but average 1 in. or more in diameter. The sepals and petals are nearly equal, of waxy whiteness, each marked at its base with a few transverse bars of rose inclining to purple, or what is known as port-wine colour. The lip is short, thick, and of waxlike consistence, white with a dash of lemon-yellow on the disk, and in some varieties a few minute rose-coloured dots are visible. The profile or side view of the flowers shows

them to be elegantly bell-shaped at the base, and, owing to their general form, colour, and concentric markings, as seen from the front, they call to mind the smaller forms of the South American *Oulotoglossum Cervantesi*, or a small marked variety of the dainty little *Aerides japonicum*. Were the plant less rare it would soon gain for itself a place in our gardens as one of the neatest and prettiest of all Australian Orchids, apart from the additional interest which it possesses as being the only introduced species of a little known genus at all likely to interest amateur cultivators of Orchidaceous plants. B.

New Australian Orchid (*Sarcochilus Fitzgeraldii*).

Untrained Azaleas.—

—In a careful examination of the several subjects brought together on the occasion of the last meeting at South Kensington, I stumbled, so to speak, upon an untrained Azalea, which afforded me more pleasure than I can well express, so much more beautiful was it than the hard-trained specimens invariably presented at exhibitions. This specimen was one of the old *A. indica alba*, and belonged to the Society. It was about 8 ft. in height and of a proportionate diameter, and it had been grown entirely in a natural manner; and, as it was densely flowered, it presented a most beautiful appearance. To compare it with the close-trained pyramids and the flat bushes presented by the majority of the exhibitors is absurd, so much more beautiful was it. It is said that unless Azaleas are trained they will not travel. No doubt the branches require some amount of steadying, but it is nonsense to say that Azaleas cannot be sent a few miles by road or rail without being trained in a manner that makes them but little short of hideous. I venture to say that Mr. Barron would, with the aid of a few stout stakes and a little bast, so secure the branches of the plant in question that it would travel to Scotland without half-a-dozen of its blooms being injured.—"Gardeners' Magazine."

Orchids at Norbiton.

—In the rich collection of these popular plants in Lord Londesborough's garden, we remarked the following in flower, viz., *Epidendrum cnemidophorum*, a rare species of the erectum type, with slender stems terminated by large, drooping clusters of blossoms, which are pink, copiously spotted with rich chocolate, and very showy; the lovely *Dendrobium infundibulum*, with its ivory-white and orange-coloured blossoms, was also finely in flower; and *D. senile* is a very curious miniature kind, with short stems densely covered with whitish hairs. W.

NOTES OF THE WEEK.

Fine English Asparagus.—Mr. Harwood, of Colchester, took the first prize for Asparagus at the Colchester and Essex Horticultural Society's show last week with one of the finest specimens of English Asparagus which we have yet seen. We are persuaded that in a very few years specimens as fine as any sent from abroad will be grown by the same market gardener. It is blancheted to about the same degree as the best French, the tip slightly green and an inch or two pinkish, but not so much as the Dutch Asparagus.

Cassiope fastigiata.—This rare and beautiful Ericaceous plant is now bearing a profusion of blossoms in one of the open borders at Kew, where it has been quite unprotected during the past winter. It grows to about 1 ft. high, and has small scale-like leaves densely arranged on the stem in a quadrangular manner, similar to *Andromeda tetragona*. The blossoms are small and bell-shaped, of a pure waxy whiteness, with a delicate pink eye, and hang gracefully from the upper part of the stems. A moist peaty soil and partial shade apparently suit it admirably.

Tulipa stellata.—A bed of this rare and beautiful Tulip is now very showy in Mr. Bull's nursery. It is somewhat similar to the European *T. Clusiana*, but is superior to that kind, inasmuch as the blossoms are larger and pure white, with a faint dash of yellow at the inner base and a delicate bluish tinge on the outside. It is a native of the Western Himalayas, where it is found at great elevations; hence it is hardy in our climate.

Leelia elegans alba.—A magnificent cluster of this lovely Orchid has been sent to us from Sir Trevor Lawrence's rich collection at Burford Lodge, Dorking. Its blossoms are large and the colours well defined, especially on the lip, the bright amethyst tint of which forms a striking contrast to the pure white of the other parts. Altogether it is a decided improvement on the type, and the cluster of flowers sent are admirable examples of skilful cultivation.

Lilium Hansonii in Pots.—This rare and handsome Lily succeeds admirably when grown in pots, a condition in which we saw it a few days ago in Mr. Bull's nursery, in which it was producing its pretty orange and chocolate coloured flowers very freely, bearing as many as fourteen on two stems in one pot. It grows from 2 ft. to 3 ft. high, and the leaves are arranged in whorls at wide intervals on the stem.

Spring Flowers at Wantage.—Mr. Candwell, of Wantage, a place celebrated for Primulas, Pansies, Polyanthus, and similar plants, has sent us some beautiful semi-double Cowslips, dwarf in habit and profuse flowerers: a very dark Polyanthus for spring bedding; also a Polyanthus named King Alfred, a finely-laced variety, and two good Daisies, white and red, the last prettily quilled.

Herbaceous Calceolarias at Langport.—There is now a fine show of these in Messrs. Kelway's nursery at Langport. It consists of about a thousand plants, blooms of some of which have been sent to us, and, judging from their size and striking colours, the display must be a very effective one.

Cornus canadensis.—Flowering plants of this pretty and now somewhat rare miniature shrub we saw a few days ago in Messrs. Jackson & Son's nursery at Kingston. It grows from 4 in. to 6 in. high, and has the upper leaves of the stem in whorls generally from four to six in number. The flowers are small and purplish, surrounded by a white involucre nearly 1 in. across, which is the most conspicuous part. It delights in moist soil, and makes an interesting bog plant, or it may be planted in the lower parts of the rock garden.

Rubus deliciosus.—One of the prettiest shrubs at present in flower at Kew is this fine Californian Bramble. It forms a compact bush a yard or more high, and for a considerable time at this season covered with a profusion of pure white blossoms, which are 2 in. or more across, succeeded by red fruits, which, by the way, are not very delicious.

Cattleya MacMorelandi.—This lovely and rare Orchid is now in flower in Messrs. Veitch & Sons' nursery at Chelsea. In habit and general aspect it is similar to *C. Mossie*, but the flowers which are rather larger than those of the ordinary varieties of *C. Mossie*, have the segments pure white, with the exception of a delicate bluish tinge on the two lateral sepals. The lip is very shallow and much crisped at the margins, with two conspicuous deep orange blotches, and a faint purplish-violet tinge at the base. Scarcely less beautiful, and quite as rare, is *C. Wagneri*, which is also in flower at Chelsea. The blossoms are large and pure white, with nothing to mar their chaste beauty except a faint dash of lemon tint at the tip of the lip.

Green Trees in London.—It is charming just now, after the harsh spring and winter, to see the beauty of the budding trees in many parts of Central and West-Central London. Such beauty should encourage people to form gardens and to plant trees in such places, for the success of those already planted shows, as far as deciduous trees are concerned, that the beauty of spring buds or summer foliage is as evident in London as in the country, and far more welcome.—V.

Iris tenax.—We noticed the true form of this fine North American Iris in flower in the Kew collection, and also at Mr. Ware's nursery, at Tottenham. Its foliage is narrow and very tough, the bases of the leaves having a pinkish tint. The flowers, which are large, are borne singly, and have oblong beardless falls of pale lavender hue, with a conspicuous spot almost white, the standards being narrow and of the same colour. It is a handsome border flower, and one which succeeds best in rather moist localities.

Alpine Phloxes at Tottenham.—These beautiful rock-plant varieties of *P. subulata* are now in full beauty in Mr. Ware's nursery at Tottenham, and nothing can well exceed the brilliant effect which they produce when seen in masses. They vary in colour almost as much as the numerous forms of *P. Drummondii*, the flowers varying from pure white to a deep violet-purple and clear rose, with every intermediate shade. It is one of the best plants with which we are acquainted for covering exposed places on rockeries, as it grows so rapidly and flowers so profusely.

Haberlea rhodopensis.—This rare Alpine geraneaceous plant, of which we gave an illustration last week, will shortly be in flower in Mr. Ware's nursery at Tottenham. It was planted on the rockery a few years ago, where it has remained unharmed, though quite unprotected. It has not, however, shown signs of flowering previously.

—No one can entertain any doubts as to the complete hardness of this plant. I have had it in the rockwork without protection for two years, but it has not yet flowered.—H. N. ELLACOMBE, *Billton Vicarage*.

Cacti in Flower at Hammersmith.—Mr. Peacock's collection is now enlivened by the following beautiful and in most cases rare species, viz., *Echinocactus mammosus*, a kind with pretty golden blossoms, 2½ in. across, borne on the apex on a cushion-like plant beset with strong spines; *Mamillaria Schiediana*, with numerous magenta-coloured fruits, in form and size much resembling those of the common *Barberry*, thickly studded on the conical stems, and enveloped in white star-shaped hairs. Similar to this is *M. stellaris*, the hairs of which are, however, browner in colour. *M. Fosteri* is another pretty kind with magenta-coloured blossoms. The most beautiful which we saw was *M. Burgessii*, which was about 4 in. high, and which had a thick rounded stem the surface of which was studded with about two dozen deep magenta-tinted blossoms, each nearly as large as a shilling, which rendered it very effective. These are but a few of the many choice succulent plants that afford interest to the plant lover in this collection.

The True Meconopsis simplicifolia is now in flower in the York Nurseries. It has had the credit of being one of the finest of Himalayan Alpines, and certainly is a striking and beautiful plant. Its flowers measure 3 in. across, and are borne solitarily on stalks 1½ ft. to 2 ft. high; they are of a deep rich blue, shaded towards the margins of the inner petals with rosy-purple, colours with which a mass of deep golden anthers in the centre contrasts grandly. The leaves, as the name implies, are very nearly, and sometimes quite, entire. They measure from 4 in. to 6 in. in length, and are lanceolate and hairy. This species is deciduous and truly perennial. The allied *M. aculeata*, another Himalayan species, also promises to make a fine show in the same nurseries shortly. It has branching stems, and forms a pyramidal mass of large purplish-blue flowers from 1½ ft. to 2½ ft. high. Its leaves are deeply lobed and rough, with coarse hairs. This, too, is deciduous and perennial. Both are quite hardy.—P.

Orchids at Chelsea.—A few days ago we noticed amongst many other Orchids in flower at Messrs. Veitch's the following beautiful kinds, viz., the *Colax jugosa*, with broad, handsome foliage and wax-like blossoms, the outer sepals being white and the inner prettily mottled with deep purple. Amongst the *Dendrobiums*, the most desirable in flower were—*D. Bensoni*, a splendid species, remarkably free flowering, with yellow and white blossoms, with two conspicuous brownish-black blotches at the base of the lip; *D. infundibulum* and *D. formosum* are somewhat similar, their large flowers of ivory whiteness rendering them very attractive. For suspended baskets, few of the late-flowering kinds are better adapted than *D. crystallinum*, the large orange lip and magenta-tipped sepals of which are very showy and last a long time in perfection. *D. tortile*, though by no means a novelty, is not often met:

with, though, on account of its delicately-tinted flowers and curious spirally twisted sepals, it is very desirable. The display of *Odontoglossum Alexandræ* is remarkably fine; the varieties are numerous, both as regards size of flower and colouring, and all are well grown, many long arching flower-stems bearing from eight to sixteen blossoms. *O. cirrhosum*, too, is very beautiful, and a dangerous rival to the preceding, particularly in the case of some of the finest varieties, of which there are several here. Amongst Orchids noteworthy as curiosities, none are so interesting as the exquisite little *Restrepia antennifera*, the blossoms of which have the lower sepal joined into a boat-shaped form, the others attenuated into antennae-like processes, all beautifully spotted with reddish-chocolate on a yellowish ground. The flowers of *Masdevallia Peristeria* form a striking contrast to those of its showy congeners, as they have nothing to recommend them but singular form and strange but dull markings.

Rose-coloured Solomon's Seal (*Polygonatum roseum*).—We lately saw flowering examples of this choice hardy plant at Kew, and also at Mr. Ware's nursery at Tottenham. The specimens in question were about 1 ft. high, though the plant is said to grow from 2 ft. to 3 ft. high in a wild state. The stems are quite erect, with the leaves, which are lance-shaped and glaucous, arranged in whorls. The blossoms are tubular, and about $\frac{3}{4}$ in. long, borne in pairs from the axils of the leaves on short, slender stalks; hence the flowers are drooping. The colour being of a soft rose tint, the flowers have a pretty effect set off by the rich glaucous hue of the foliage. It inhabits various regions in Central Siberia, and though it has been introduced for some considerable time, it is at present very rare in collections.

Masdevallia Backhousiana.—This singular and highly interesting novelty, which was disposed of at Stevens' the other day, is now flowering in Mr. Peacock's collection at Hammersmith. As we have previously remarked, it is allied to *M. Chimera*, but it is considered by Professor Reichenbach to differ from that kind. The flowers are produced singly, and the three segments are from $\frac{3}{4}$ in. to 4 in. across, each having tail-like attenuations from $\frac{1}{4}$ in. to $\frac{3}{4}$ in. in length. The ground colour is pale yellow, thickly spotted with reddish-chocolate, and covered on the inner surface with numerous short hairs. The lip is small, and forms a whitish, pocket-like process in the centre.

Pleione Hookeriana.—Several potfuls of this charming Alpine Orchid now in flower forms a conspicuous feature in the Orchid houses in Mr. Peacock's garden at Hammersmith. It is, perhaps, the smallest of all the cultivated kinds, growing not more than 3 in. high, and bearing numerous blossoms, which spring from amidst short, ovate leaves. The colour is delicate pink and white, the lip being of a darker hue, and the pencillings of a lemon tint. It is one of the most desirable kinds for growing in a cool house, conditions under which it thrives admirably. It is found at considerable elevations in the Eastern Himalayas.

Hibbertia Reedi.—This charming little Australian plant is now seldom met with, yet it is one of the prettiest ornaments which a greenhouse could possess during spring, when it is literally covered with small golden blossoms, which are very effective mixed with those of other plants. We saw it a few days since in Messrs. Lee & Son's nursery at Hammersmith, where many of the now little-known Australian plants require attention. In addition to this, we saw a variety of *Hederaea tulipifera* with flowers the markings of which were of a deep blood-red, being the darkest-coloured form with which we have yet met.

Hesperochiron pumilus.—This rare hardy plant is now in flower on the rockery in Mr. Ware's nursery at Tottenham. It is stemless, dwarf in growth, and has numerous oblong leaves borne on slender stalks, forming a rosette tuft. The flowers are produced singly on slender stems from the axils of the leaves, erect, bell-shaped, measuring nearly $\frac{1}{2}$ in. across, and are white, varying to a purplish tinge. It grows in marshy ground, and in other damp places in the Rocky Mountains of Northern Utah, &c. It belongs to the same family as the *Nemophila*, and is as yet scarcely known amongst cultivators.—W. G.

Masdevallia tovarensis.—As an instance of the free-flowering habit of this charming cool-house Orchid, we notice in the last number of "*L'illustration Horticole*" that a plant in the garden of M. de Rothschild, at Ferrières, had 137 blossoms expanded on it at one time.—W.

Succulent Plant Catalogue.—Mr. Peacock, Sudbury House, Hammersmith, has printed a catalogue of his succulent plants, consisting of the names of the plants according to their current nomenclature. The result is a neat little brochure invaluable for reference, more especially if the names had been accurately spelt, which in many cases they are not. Mr. Peacock has resolved to distribute 5000 copies of it amongst growers and collectors of

succulents. Those who wish for it, therefore, have only to send to him a suitable wrapper directed and stamped.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

JUNE 2.

THIS, the Whit Monday flower show, notwithstanding a downpour of rain during the whole day, was visited by nearly 9000 persons. The large tent was well filled with plants, but this was owing chiefly to the liberality of exhibitors at the last meeting, many of whom allowed their groups to remain, which added much to the attractiveness of the show. These included Mr. Jackman's Clematises, Roses from the Slough, Cheslunt, and Chelsea Nurseries, the miscellaneous collections from Mr. B. S. Williams, Messrs. Cutbush & Sons, Osborn & Son, Laing & Co., Boller, and others, besides several groups of Ferns, fine-foliaged plants, &c., from private gardens. The competitive classes were not so well filled as might have been expected, especially those which contended for the general prizes, and the exhibits, too, were neither numerous nor noteworthy. The prizes for groups of decorative plants arranged for effect were awarded to Messrs. Wills, Hooper & Co., Aldous, in the order in which they are mentioned. The collections of plants in flower were, on the whole, very well grown, especially *Fuchsias* and *Pelargoniums*. A group of Harrison's Musk, shown by Messrs. Reeves, was deservedly much admired, and gained the first prize.

MANCHESTER ROYAL BOTANICAL AND HORTICULTURAL SOCIETY.

MAY 30 TO JUNE 6.

NOTWITHSTANDING the sunless spring which we have had, the display made on this occasion, taking it collectively, was above the average of what these annual Whitsuntide exhibitions held here usually are, and which are deservedly most successful, combining, as they do, an assemblage of every description of plants, exotic and hardy, that can at this season of the year be shown in a condition to fairly represent their respective kinds. Every available foot of space in the permanent exhibition building, the annex adjoining, and also the large tent, were filled as full as they could hold. The evergreen trees and shrubs, as well as kindred subjects were grouped outside, and added much to the interest and general effect of the exhibition.

In the amateur's class of twenty stove and greenhouse plants, half flowering and half fine-leaved subjects, there were three exhibitors, who collectively staged such a bank of fine specimens as have rarely before been brought together. The two best collections, shown by Mr. Tudgey, gardener to J. F. G. Williams, Esq., Worcester, and Mr. Hamlett, gardener to E. Pilgrim, Esq., Cheltenham, were so nearly matched that the judges awarded first prizes to both, and well they deserved it. In Mr. Tudgey's group there was an unusually good *Anthurium Scherzerianum* not less than 4½ ft. through and as much in height, bearing some sixty fully developed flowers large in size and bright in colour; it is much the largest example we have seen. The fine spring-blooming *Heaths*, *Victoria* and *ventricosa* *magnifica*, were large in size and profusely flowered. Three *Palms* in the same group, viz., *Geonoma gracilis*, *Stenersonia grandifolia*, and *Pritchardia pacifica*, were very elegant, yet massive. Mr. Hamlett had a wonderfully fine *Cordylina indivisa*, the largest of which were extremely stout and strong; a fine new orange-coloured seedling *Ixora*, named *Pilgrimi*; several well flowered *Azaleas*, including the glowing purple *Duc de Nassau*, still one of the best; an immense *Encephalartos villosus*, and a couple of large and vigorous *Gleichenias*, *G. Spachiana* and *G. rupestris*.

In the corresponding class for nurserymen there were also three exhibitors, among which Mr. Cypher, of Cheltenham, and Messrs. Cole, of Manchester, had a close run, but the first prize was awarded to the former. This collection contained the finest-flowered yellow *Carendish Heath* with which we have met; it was literally covered with bloom from top to bottom, so much so as to scarcely admit of its leaves being seen; an equally well-bloomed *Stephanotis floribunda*, and the now seldom-seen *Pimelea spectabilis* *rosea*, much the best form of this distinct and handsome plant, were also shown in this collection. In Messrs. Cole's group was a profusely-flowered blue *Statice profusa*, 5 ft. in diameter, and a very meritorious *Ixora coccinea*, covered with bright scarlet flowers, which, when well managed, as this was, is the finest of all the *Ixoras*. Messrs. Caldwell, of Knutsford, Cheshire, had an effective exhibition, in which were beautiful examples of the elegant *Davallia Mooreana* and

Gleichenia dichotoma, both of which rank amongst the most distinct and beautiful of Ferns. The six collections competing in these classes were such as to really make an exhibition in themselves, and at once exemplified the superiority of the effect produced by mixed groups of blooming and fine-leaved plants over an arrangement in which the flowering and the ornamental-foliaged subjects are shown separately.

Orchids, as usual at Manchester, were present in much greater numbers, and the plants individually larger than those seen at other shows, although on this occasion some collections were absent. In the amateurs' division for fifteen plants Mr. Bolt, gardener to W. Turner, Esq., was first. Most notable amongst his plants were an exceedingly well-grown *Odontoglossum vexillarium*, bearing sixteen large spikes of flower; O. Roezli, with eighteen flowers; O. cirrhosum, equally fine; *Saccolabium Turneri*, one of the forms of *S. guttatum*, unsurpassed if equalled by any of the others; it bore four charming drooping racemes, the largest of which was over 20 in. long, the spotting and colour of the labellum deeper than usual; associated with this were also *S. guttatum*, with seven spikes; *Aerides Fieldingi*, bearing five spikes; *Masdevallia Lindenii*, and *Lelia purpurata*, splendidly bloomed. Mr. Swan, gardener to W. Leech, Esq., who was second, had in a very good group a very large and finely-bloomed *Dendrobium thyrsiflorum*, with fourteen of its lemon and white-coloured drooping racemes. For nine Orchids Mr. Osman, gardener to E. B. Dodgson, Esq., received the first award; amongst them were the glowing magenta *Masdevallia Harryana*, with large flowers; *Dendrobium Schröderi*, and *D. Devonianum*.

Groups of fine-leaved Plants were well and largely shown, and had an excellent effect, serving as a background for the Orchids and other smaller growing flowering plants. They consisted of the usual kinds of Palms, Cycads, Crotons, Tree and other Ferns, &c., and, as arranged on this occasion, they happily toned down the glow of colour produced by flowering plants without making the whole too sombre, a result of not unfrequent occurrence since large fine-leaved subjects have been so much used, both at exhibitions and for general purposes and decoration. The new permanent iron canvas-covered annex adjoining the exhibition house, 330 ft. long and 72 ft. wide, presented a beautiful appearance looked at collectively, and the plants individually were generally well grown. Conspicuous amongst them were Mr. C. Turner's large and magnificently bloomed Roses, which here had no rivals; he showed in both the classes for 12 and 20. The most remarkable amongst them were large bushes of the well-known pale rose-coloured Charles Lawson, Céline Forestier (pale lemon colour), Miss Ingram, Paul Verdier, Beauty of Waltham, Edouard Morren, Madame Thérèse Levet, and the ever-lovely La France.

Azaleas were well shown by Messrs. Cole, whose plants were beautifully flowered and nearly untrained, their branches being allowed to hang in almost their natural positions.

Exotic Ferns.—Of these a well-grown group was contributed by Mr. Lingard, gardener to H. Samson, Esq., in which were large examples of *Gleichenia Splendens*, G. Mendelli, and G. flabellata; the latter one of the most distinct.

Miscellaneous Subjects.—Messrs. J. Waterer & Sons, of Bagshot, occupied all the end of the annexe with *Rhododendrons*, to which the Society's gold medal was awarded. In the class of twenty miscellaneous plants in or out of flower, Mr. Smith, gardener to J. Rylands, Esq., stood first, having amongst others a very large spreading example of the fine Tree Fern (*Cibotium regale*). Prizes were offered for *Sarracenias*, *Nepenthes*, *Droseras*, and kindred plants, and shown in that way they were very effective. A group shown by Mr. Bruce, gardener to J. Fildes, Esq., contained unusually well-grown *Sarracenias*, consisting of *S. Drummondii* alba, *S. Drummondii* rubra, *S. variolaris*, *S. psittacina*, *S. purpurea*, *S. rubra*, and four forms of *S. flava*; also *Darlingtonia californica*, numerous *Droseras*, and *Dionaea muscipula*. Mr. Anderson, Meadowbank, Glasgow, received the Society's gold medal for a beautiful exhibition of *Amaryllises*. Messrs. R. P. Ker & Sons, Liverpool, won the Society's gold medal for a hundred miscellaneous plants effectively arranged. Messrs. J. Dickson & Sons, Chester, had a fine collection of eighty Alpine and herbaceous plants, for which a gold medal was awarded. One of the most interesting exhibits present was Messrs. Standish & Co.'s Japanese hardy plants, consisting of some 600, representing eighty-five species or distinct varieties; to this a gold medal was also awarded. Messrs. Waterer likewise received a similar medal for a beautiful collection of twenty-five varieties of Holly, and another for ten hardy evergreen trees and shrubs. Messrs. Osborn & Sons showed a select group, consisting of this class of plant, not over large, but in perfect condition. Mr. B. S. Williams was awarded a gold medal for twelve new and rare plants. The same exhibitor also had a large and varied collection of plants, not for competition, as had likewise Messrs. Osborn & Sons, from whom came some finely-flowered large baskets full of the lovely blue *Gentiana acaulis*, much fuller of bloom than it is often met with.

Messrs. R. P. Ker & Sons had likewise a very interesting group of plants of this description.

Fruit was quite as abundant as the dull character of the season would have led one to expect. Mr. Miles, gardener to Lord Carrington, was first, with a very good collection, in which were Black Hamburg and Muscat of Alexandria Grapes; Black Circassian, and Governor Wood Cherries; beautifully finished very fine James Veitch Strawberries; Elruge Nectarines; Brown Turkey Figs; Cox's Golden Gem Melon, and a Pine. Mr. Jamieson, gardener to the Earl of Crawford and Balcarrais, was first for Black Hamburg Grapes, finely finished, black, and well covered with bloom. In the class for white Grapes, Mr. Bannerman, gardener to Lord Bagot, took the first prize with a very good Buckland Sweetwater. Mr. Upjohn, gardener to the Earl of Ellesmere, was first for Strawberries in pots.

A list of prizes will be found in our advertisement columns.

PLATE CLXXXIII.

LILIIUM PARKMANNI.

Drawn by NOEL HUMPHREYS.

THIS remarkable Lily was raised by Mr. Parkman, President of the Massachusetts Horticultural Society. It is a hybrid between *L. auratum* and a deep-coloured variety of *L. speciosum*. The latter was the female parent. Fertilisation, Mr. Parkman states, took place readily, and the young bulbs were planted in the open ground for the first time in the spring of 1869. There were about fifty of them. Several, as they grew, showed the peculiar spotted stem of the male parent, but when they set flower-buds, as nearly all of them did in the same season, the features of *L. auratum* could be distinguished only in one of them. The rest, in bud and flower, appeared to be merely *L. speciosum*, quite unaffected by the pollen of the male parent. The one alluded to was a remarkable exception. The flower opened ten days earlier than any of the rest; it had the fragrance of *auratum*, and resembled it also in form. This first flower measured 9½ in. from tip to tip of the petals. In the following year there were several flowers, of which the largest measured 1½ in. This hybrid, Mr. Parkman reports, was the most successful result of a great number of experiments tried by him in the cross-fertilisation of Lilies. This genus is certainly remarkable in the tenacity with which it preserves the characteristics of the female parent and resists the influence of the male. Thus he impregnated *L. longitortum* and *L. Takesima* with the pollen of *L. auratum*, *L. speciosum*, and six or eight other Lilies, the anthers of the fertilised flowers being carefully removed before they ripened. *L. Takesima* bore seed in abundance, but the resulting plant did not differ perceptibly from its female parent, showing no feature of the male. He removed its anthers and fertilised it again with *auratum* and *speciosum*, thinking that the influence of the male might appear in the second generation if not in the first, but this double fertilisation produced no effect. The same result followed a similar experiment with *L. canadense* and *L. superbum*. In this case also the flower resulting from the first experiment was again fertilised. The result was a very scanty crop of seed, but this seed produced a plant in which no sign of the male influence was visible. *L. Parkmanni*, as will be seen, is a noble Lily, large in size and strikingly bright in colour. It succeeds well in a pot, but Mr. Anthony Waterer, from whose establishment, at Knap Hill, the flower was obtained from which our plate was prepared, informs us that it grows freely with him planted out in company with *L. speciosum*.

Dates of Rose Shows.—"Delta," who objects to the alteration of the dates of Rose shows, has doubtless since then found that two fine days do not make a spring, and also that outdoor Roses have so far made but slow progress. Looking at the general effects upon vegetation produced by the late cold spring, it is impossible to doubt that Roses must be backward. In making such important changes, depend upon it the authorities of the shows in question have not done so without good reason. "Delta" says, "changes in shows are sure to be charged as brought about in someone's interest." Certainly in the present case it is so, but it is in the interest of both growers and the public. The laws of the Medes and Persians may have been unalterable, but the dates of shows are not; and when the season is a month later than usual, show authorities may well alter their shows to suit the season.—A. D.

Royal Oxfordshire Horticultural Society's Show, June 17.—It may interest some to know that Messrs. Webb & Sons, Worsley, Stourbridge, give special prizes at this exhibition for the best collections of vegetables, consisting of eight distinct varieties, and including Webb's Improved Ashleaf Potato and Webb's Perfection Pea. 1st prize, 21s.; 2nd prize, 14s.; 3rd prize, 7s.

of the pots they occupy, which permits of their making growth at the same time the flowers are expanding which will bloom in succession, to assist which manure water should be given once a week. Plants that have had their points pinched out to induce late flowering will also be benefited by manure water, and care should be taken to see that they are quite clear from aphides before the blooms expand, otherwise if it becomes necessary to fumigate them after they open, it will cause most of the petals to drop.—T. BAINES.

Hardy Fruit.

The most pressing requirement in this department now is the extermination of aphides, for, in spite of every precaution, black aphid is almost certain to attack Cherries, and sometimes Peaches and Plums; and if the trees be not dressed as soon as they are attacked, the aphid increases with such rapidity, that remedial appliances have to be so strong, that injurious effects are apt to happen. Our usual remedy is soap-suds, used just as they come from the laundry, but if the trees be badly infested Tobacco liquor is added, and in a day or two afterwards they are well washed with clean soft water, applied with some little amount of force by means of the syringe or garden engine. Another important operation now demanding attention is thinning the fruit, but to what extent it is difficult to say, as so much depends on the variety, health, vigour, &c., of the trees. Each one must therefore decide for himself as to the quantity of fruit which each tree is able to perfect without injuriously affecting the next year's crop, for it should ever be a maxim that two moderate crops are preferable to one heavy one. The surplus fruit of Apricots with us were picked off a week ago, those removed being the smallest and worst, placed such as those behind or between the branches. Peaches have set in clusters, the thinning of standards and pyramidal trees will follow a fortnight hence, and at the same time the most vigorous shoots will be stopped, and the weaker growths a few days later. In thinning Pears bear in mind the variety; for instance, twice the number of fruit may be left on a tree of Winter Nela as on that of Duchesse de Angoulême, for the obvious reason that the latter fruit is double the size of that of the former. Again, as to Peaches and Nectarines, one large fruit is infinitely better than two small ones. If the trees have received their final disbudbing, the permanent growths may now be laid or tied in in the case of walls not wired; a few Hazel twigs, placed in a horizontal position in front of each shoot, and fixed at the ends in the old branches, answer all the purposes of nails and shreds, and the work is done more expeditiously. Stop at the first joint all the sub-laterals that are being made by next year's fruiting wood, and pinch out the points of any shoots that are growing too robustly. This is the season when cordon-trained trees require most attention, which, however, merely consists in constantly keeping the growths well stopped back, an operation which induces fruitfulness, but which, at the same time, in some measure cripples the trees. The latter, therefore, must be kept in health and vigour by means of frequent manual dressings. These are best supplied in the shape of surface mulchings of well-rotted manure, which should be continued during the whole of the growing season. The great merit of the cordon system is the large variety of fruit that can be had from a comparatively limited space; therefore, in the case of small gardens, cordons are worthy of adoption if for no other reason than this. A large tree of Williams' Bon Chrétien Pear, that may produce bushels of fruit that will not keep, is to an amateur, of no more value than a tree that produces a couple or three dozen fruit, and as the cordon system admits of at least twelve kinds being grown in the space of one large, fan-trained tree, a long succession of fruit may be had in lieu of the fortnight during which Williams' Bon Chrétien remains good; if the fruit be grown for market, that, of course, is another matter, but even then a greater variety would be desirable. Red and White Currants are exceptionally well-fruited, and we are now cutting, or rather pinching, off some of the useless spray which overshadows the fruit; the main shoots will not be cut till after the fruit is gathered, as these form supports for the nets, which we are obliged to use to keep off birds. Gooseberries are being similarly treated. Summer stopping of these is not generally practised, but it ought to be, considering that such stopping ensures handsomer and more prolific bushes.—W. W.

Extracts from my Diary—June 9 to June 14.

FLOWERS.—Potting Eupatoriums and Bouvardias raised from cuttings; also Mignonette and Double Petunias. Propagating Poinsettias. Tying in young shoots of Stephanotis and Allamanda. FRUIT.—Commencing to thin Grapes in late May (Black Alicante). Going over Black Hamburgh Grapes for exhibition, and cutting out all inside and crowded berries. Watering late Vinery border with manure water. Potting Garibaldi Strawberry for autumn fruiting. Layering a few early runners of Keen's Seedling and Perpetual Pine Strawberries for early forcing. Trenching ground for Strawberries.

Mulching Peach borders with decayed manure. Tying in young shoots of Peaches, &c.; dusting Peaches outside with Tobacco powder to kill green-fly, &c. VEGETABLES.—Tying and stopping Cucumbers. Hoeing between all growing crops, and staking Scarlet Runners. Digging out Celery trenches. Planting Veitch's Self-Protecting Broccoli. Weeding and thinning out crops of Parsnips, Beet, and Carrots. Sowing a batch of Rosette Colewort, Little Pixie Cabbage, Green Cos, and Wheeler's Tom Thumb Lettuce. Thinning out beds of Carrots, Onions, Beets, and Parsnips. Clearing ground of Spinach. Planting out more Lettuces between Celery trenches. Hoeing and clearing Asparagus beds, and sowing Mustard and Cress.—R. GILBERT, Burghley.

TREES, SHRUBS, AND WOODLANDS.

NEW ZEALAND FORESTS.

THE New Zealand forest is entirely evergreen, and though the return of spring is not visible in a fresh outburst of foliage, which makes the woodlands of the old country so attractive, yet there is compensation in the landscape being spared from the desolating appearance of leafless trees. Many of those plants which adorn our conservatories with continual freshness are natives of this forest. For instance, the Tree Fern *Dicksonia antarctica* is well known for its majestic appearance, but it should certainly be seen in this its natural habitat, with stems 20 ft. high, crowned by fronds from 8 ft. to 10 ft. long. To stand at the side of a chasm and look down its rugged sides clothed with Blechnum and Mosses, a gushing stream sparkling at the base, and one of these giant Ferns filling up the centre, is but a sample of the many natural Feries which the traveller comes across. Another exile known to most lovers of Palms is *Areca sapida*. It soon overtops the Tree Ferns, while the different shades of green make a pleasing contrast. In spring it throws out bunches of red berries, which are much prized by the natives, while the leaves are used by many settlers for thatching purposes. In its habit of growth it seems to shun all exposure, and seeks the shelter of other trees. Often it is found in places completely guarded against both sun and wind. We have a species of Cabbage tree, which from its hardy habit would do well for "sub-tropical gardening." In leaf it is much like a *Dracæna*, and when seen at a distance looks very like a plume of feathers. For greenhouse decoration in winter it would be a pleasing object. Another denizen of the forest here is *Dacrydium cupressinum*, a plant which has not received the attention which it deserves. It has been in cultivation more or less for thirty years, and having been numbered with the Juniper family, may in some collections be found labelled *Juniperus* *clausa*. The brightness of its evergreen foliage, which retains vigour and freshness throughout the entire year, with innumerable waving branches bending with feathery lightness to the most gentle breezes, including a pleasant symmetry of form, all tend to give it rank amongst the rare and beautiful, and make it a most desirable plant for greenhouse culture.

We may now notice one or two of the timber trees which constitute the wealth of the New Zealand forest. The foremost of these is known to collectors of hard woods as *Dammara australis*. Leaving out some of our British Oaks of historic fame, it would be almost impossible to find a more stately tree. It is common to meet with it in the forest of the North Island, rising to a height of 150 ft., and measuring 30 ft. in circumference at the base. The wood is very inflammable, from the amount of resin contained in it; and this no doubt accounts for vast extents of such forest having been accidentally burnt. It exudes a valuable gum, which has become an important article of commerce. For shipbuilding it is considered equal to Oak, and large quantities are annually exported for that purpose. Another timber tree of colonial reputation is *Podocarpus Totara*. In foliage it is somewhat sombre; the wood is so close in the grain as to be termed "iron wood" by the natives, and is of course very durable. As indicative of the wide domain of some of the Natural Orders, we may mention that the *Verbenæ* has a representative here, which ranks amongst the finest timber trees which the colony possesses, viz., *Vitex littoralis*. After the first few years of growth it begins to assume its proper form, which ever after marks it as one of the handsomest trees of the forest; and for the construction of wharfs and bridges, and every variety of work where it is necessary that wood should be plied under water or deeply imbedded in the earth, its timber is considered invaluable.

The New Zealand forest cannot be said to be rich in floral productions. There are, however, some which deserve notice. Foremost amongst these, for peculiarity of growth and gaiety of flower, ranks the *Kata* (*Metrosideros lucida*). It commences to entwine round other trees in the form of a very slim climber, but its growth is so rapid that it quickly encircles the whole tree. With every fold it tightens its grasp until all vitality is entirely crushed out of the

trunk round which it clings for support. Another member of the same family, *Metrosideros tomentosa*, makes the forest somewhat gay during the months of December and January. Its flowers, which are scarlet, are arranged in terminal cymes. British residents have honoured it with the name of "Christmas tree." Another floral attraction in the forest is *Clematis Nova Zelandia*. It provides itself with a natural trellis-work by entwining the rugged stem, and then hanging down from the branches in long festoons. The flowers are pure white, and produced in rich profusion; and being a spring flower, it is to the natives a floral almanac, telling them when to plant their much-prized Kumara or Sweet Potato.—"The Gardener."

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS.

Hardiness of Shrubs at Coombe Wood.—It may be of interest to state that, in the elevated portions of Messrs. Veitch & Son's Nursery, several shrubs which in other places—at Kew, for instance—have been severely injured, or even killed, have suffered comparatively little at Coombe Wood. Amongst these are the Chilean *Azara microphylla*, *Berberis Darwini*, *Grevillea rosmarinifolia*, not injured in the least, and thriving luxuriantly; *Xanthoceras sorbifolia*, uninjured, and about to flower; and *Magnolia Campbelli*, a Himalayan species, breaking freely; the Golden Chestnut (*Castanea chrysophylla*) is, however, severely hurt; *Quercus Buergeri* (a handsome Japanese Oak), *Viburnum Awafukii*, *Raphiolepis ovata*, *Olearia Haasti*, *Osmanthus myrtifolius*, and the ornamental Japanese Grass (*Eulalia japonica variegata*) are quite uninjured and thriving vigorously.—W. G.

Hardiness of the Indian Azalea.—Amongst the trees and shrubs which have passed through the winter unharmed, none in this district are more conspicuous than the varieties of *Azalea indica*; of these several plants in large pots were placed out-of-doors in a high exposed position about this time last year, and from that time until now they have neither been removed nor protected, and in a few days they will be masses of bloom—as fine, in fact, as any that could be grown indoors. Last year when overhauling our *Azaleas* two or three which were nearly killed by standing too long in a dark place were thrown away; one of our labourers picked them up and planted them in his little front garden; there they made good growth, and they are now beautifully in bloom. In another place not far from here there is another fine plant quite established out-of-doors and doing well; therefore it may be fairly inferred, I think, that Indian *Azaleas* might safely be made to adorn our lawns and shrubberies, and I can assure those who have never seen them at their best out-of-doors that very few shrubs surpass them in beauty.—CAMBERIAN.

Xanthoceras sorbifolia.—This has been in flower here for nearly a fortnight, and I am very much disappointed with it. Perhaps, however, the frosts and winds of May have disfigured it, and that in a better season it would be more attractive.—H. N. ELLA-COMBE, *Ellon Vicarage*.

ROSES.

Outdoor Roses.—Like all plants that make a large growth annually, Roses, either mixed with other plants or by themselves, exhaust the soil in beds and borders devoted to them rapidly; but little difficulty exists in supplying them with all they require in this respect, as liberal dressings can be forked in after they are pruned, and mulching with manure through the summer months can also be resorted to. Where the land is at all of a light description, this covering with rotten manure is of the greatest possible use, for not only are the plants invigorated thereby, but it protects the best roots, which are those that lie nearest the top, from the scorching power of the sun, and it also very much reduces the loss of moisture from the soil by evaporation, consequently it is often better to apply a portion of the manure given to Roses in this way than dig the whole into the ground. Where mulching has not been previously carried out, I should recommend it to be at once applied; but in private places where it is frequently most needed, when the beds hold a prominent position, the manure used needs to be of a character such as not to form an eyesore, that is, it should not contain much straw matter, and ought to be so far rotten that it can at the time of putting it on be reduced to a fine condition, in which case it will have no more objectionable appearance than a surface covered with tan. An excellent and far from unsightly material for mulching Roses, where obtainable, is spent Hops, laid on about 1 in. thick. There is seldom much difficulty in getting these near large towns, and a cartload will go a long way. Although they not possess enriching properties more than ordinary vegetable matter, they keep the ground cool and the

roots from being parched up by the action of the sun. In private gardens, Roses are planted in so many positions and so many ways as almost to preclude the possibility of giving them the manual sustenance which they require. This is especially the case with standards when planted on Grass in rows by the sides of walks and in similar situations. I have always held that this is the most objectionable way in which Roses can be grown, as from the difficulty above stated they often get into such an impoverished condition as to be anything but ornamental. One way of meeting this is in winter to remove the turf for some feet round the roots and add new soil and manure, afterwards replacing the turf, but the objection to this is that it makes the Grass grow round the trees at such a rate, as to require mowing twice as often as the adjoining surface, and from its extra greenness gives the lawn a patchy appearance, but where Roses are thus grown it is necessary to do something, in order to assist the exhausted soil. This may be accomplished now with marked effect, by giving liberal soakings of manure water to the circular spaces, that are usually left unfurrowed round each tree, filling these up with the liquid several times, by which means it will not only settle straight down, but will spread out towards the extremities of the roots under the Grass. If given before growth commences, the first after blooming is over, its effects will be at once apparent, not only in the shape of better growth, but also finer flowers.

Insects and Mildew.—The two other difficulties with which Rose growers on either a large or small scale have to contend are insects, such as aphides, red spider, and the Rose maggot, and also parasitic fungi; the Rose maggot will still be present, though not in such large quantities as earlier in the season, and can only satisfactorily be dealt with by hand-picking. Aphides are generally much more troublesome in confined private gardens than in the open spaces devoted to the cultivation of Roses by trade growers. I have tried all sorts of contrivances for fumigating them in the open air, but found them little more than a waste of time and material, for this reason, that the space temporarily enclosed around the plants for the purpose is too small to retain a sufficient body of smoke long enough to kill the insects. For their effectual destruction nothing is equal to syringing with Tobacco, Quassia, or soap and water, separate or combined. I have found that a weak infusion of Quassia or soap, combined with Tobacco water, not only kills the eggs of these pests, but every living insect which it touches. As the summer advances red spider may also be looked for, and if it be not taken timely in hand it not only completely spoils the appearance of the foliage, but has a correspondingly injurious effect upon the autumn flowering; a little Gishurst added to the Tobacco or Quassia water (which alone will not exterminate this spider) will kill it, but it must be used with caution, or it will cause the advancing bloom-buds to fall off. Water impregnated with sulphur will likewise kill red spider, and also mildew, which towards the end of summer is usually so injurious, especially where the soil is at all light and much sheltered from free currents of air. This decoction can be made by putting 8 or 10 gallons of clean water into a vessel, and adding 1 lb. of flour of sulphur, stirring the two up well once a day for a week or so, and using the water in a clean state, for unless so dealt with if the syringe be of very open one it will clog up. Liberal applications of water with the garden engine or syringe two or three times a week will be of great use in keeping down aphides and red spider. Except these matters are attended to there will be little else but disappointment, and in the case of private growers the mistake often committed is cultivating more than there is time to properly attend to; one-fourth the number usually grown well cared for, and sufficiently supplied with all that is necessary to invigorate them, will give very much more satisfaction than ten times the quantity left, as they often are in a great measure to themselves through the whole course of the season, with the exception of pruning, tying, and digging the ground, and the addition of often a very inadequate amount of manure. In large establishments where Roses are cultivated extensively for sale comparatively little attention is given or required, for where many acres of them are grown together, localities are selected in which soil, climate, and other conditions are most favourable for their growth, and where insect pests, mildew, and other annoyances that beset their growth in private gardens are very much less troublesome.

Rose Stocks.—Those who propagate their own standard and half-standard Roses by budding will need to see that the stocks do not suffer from want of water should the weather become very dry, otherwise the growth will be weak and puny, the buds when put in will be much less likely to take freely, and the aftergrowth will be proportionately weak. It is well to go over the stocks and to remove all the superfluous shoots that are thrown out from the stem, retaining some three or four at the head, which will be sufficient to favour the development of roots.

Pot Roses.—A great portion of the stock will now be either plunged out-of-doors, or in a condition for being so placed, and it is here during the pressure of the multifarious subjects which demand attention at this season that Roses are apt to get neglected; hence it is that pot Roses, except in the case of those who make a speciality of them, are often unsatisfactory, for no matter how much care is bestowed upon them during the time they are being forced or brought gradually into bloom under glass, as the case may be, comparatively little can be done to assist the production of flowers unless the plants receive all the attention that they need after the flowering season is over, as it is during that time that a great deal of their root development and shoot-growth is made, upon which depends their ability to produce a full complement of flowers. The foliage of Roses that have been grown under glass is necessarily more tender than that of such as are produced in the open air, and consequently more liable to both red spider and mildew, for the destruction of which a continual outlook is needed, and where either of these pests is present, means should be taken for their eradication. Where aphides exist the plants should be either dipped, syringed, or removed to a house or roomy pit that will hold a body of smoke sufficient to remain long enough to kill the insects. To fumigating in ordinary garden frames or such like contrivances there is the objection that the small volume of fumes which they hold so soon escapes, that to kill the insects it is necessary to apply the smoke so dense that it is liable to injure the plants. To pot plants again manure water will be of the greatest assistance, also to large specimens planted out within the different glass erections in which Roses are so grown, and which it is necessary to encourage by every means between this and the autumn to make as much strong growth as possible. On these likewise both animal and vegetable parasites should be dealt with as in the case of outdoor Roses, using every means at command to insure the production of as much healthy foliage as possible, and its retention in a fresh vigorous condition.

T. BAINES.

NEW ROSE STOCK.

ROSA POLYANTHA, of which the annexed is a representation, is strongly recommended in the "Journal des Roses" as a stock. It is a Japanese Rose, which bears single white odoriferous flowers, thirty or forty in a panicle, succeeded by obovate fruits of the size of a cherry-stone. M. Carrière states (Rev. Hort., 1876) that it makes sterile shoots of 6 ft. or upwards in length. Some seeds of it received from Japan in 1873, at the Botanic Gardens of Bordeaux, produced young plants of fine growth, in which, after the second year, an exceptional vigour was noticed, and since then numerous trials have proved that it may be advantageously substituted for the Briar as a stock. To provide these, strong bushes of it should be carefully taken up in November, and the stems separated, so as to preserve to each a piece of heel, provided or not with roots. The larger stems should be planted at proper distances apart, and budded in July or August, to make standards. The shorter stems, being more or less cut back, will make half-standards or dwarfs. The branches and pieces of stem up to the smallest sprigs should be reserved for cuttings which root readily, and the larger roots obtained

by dividing the stump can also be grafted, potted, and then placed on a hot-bed, where the grafts will speedily push vigorously. A cutting of this Rose of medium strength will furnish, after the first year, a stock fit to work as a dwarf, and in the second year one for a half or full standard.

INSECTS ON ROSES.

I do not remember a season in which Roses have been so much infested with insects as they are this year, as not only have they more than their share of aphides, but the maggot, a worse enemy, is rife among them, and is fast curling up the leaves and destroying the buds. To get rid of these pests by the ordinary means of washes or insecticides is quite out of the question, as owing to the manner in which they are enfolded amongst the foliage none of these can ever reach them, and where there are many plants, picking them out by hand is tedious work. The most effectual, as well as the most expeditious, way of dealing with the maggots is to go carefully over the plants and pinch them between the finger and thumb. Their presence may be readily detected by the bloated and partially twisted appearance of the foliage, and to make sure of their destruction, every leaf in this state should be operated on. In

dealing with green fly nothing is equal to a decoction made from Tobacco, Quassia-chips, soft soap, and Gishurst; this mixture is most powerful in its effects, and yet if used properly diluted so mild and harmless, as regards the Rose, as not to injure the most delicate leaves. The proportions in which I use it are 1 lb. of Tobacco and 10 oz. of the other three ingredients to 10 gallons of boiling water, which, bedewed on the plants at a temperature of 90° or so by means of a syringe, is almost sudden death to the aphides,

or they may be despatched by dipping the shoots into the mixture. Where they are not all affected, or the plants stand a long way apart, this is the most economical plan, as it involves less loss of liquid, although it takes more time. If the dipping or syringing be done over night and allowed to remain on till morning, it is generally more effectual than it otherwise would be, and there is less risk of injury than when the sun has more power; but in all cases a good washing with clean water should follow, so as to cleanse the foliage and knock off any stragglers that may be hovering between life and death from having partly escaped through not being exposed to the moisture. As a cure for mildew, pentasulphide of calcium is as good as anything if used in the proportion of a wine-glassful to a 4-gallon pot of water, and syringed on the plants in the evening; this destroys the fungus. Sulphur, too, dredged on when the foliage is moist with dew is a good remedy, but not so likely to reach every affected part.

S. D.

Roses at Cannes.—I do not think your answer to Captain Thomas's question as to *Rosa alba Camellia* in last issue (p. 446) can be correct, as the *Ramans* or *Rosa rugosa* (or *Regelia*, as it was called when first introduced) has certainly not got smooth shining leaves like those of a *Camellia*. I should feel more inclined to think *R. alba Camellia* was the single Macartney Rose.—W. E. GRUBBLETON.



Rosa polyantha.

THE FLOWER GARDEN.

POTTING AURICULAS.

In reply to "Brookhurst" (p. 429), who thinks Mr. Douglas wrong in recommending Auriculas to be repotted about the middle of May, I have only to uphold what I have always practised and written, and that is that these plants cannot be repotted too early after they have bloomed. I therefore think Mr. Douglas is right. All my exhibition plants are repotted immediately on their return from the show, *i.e.*, before April is out, and the rest follow in the order of their passing out of bloom. Mr. Douglas, happily, need not subject his plants to a turning out of pots and a long journey, but I needs must; and thus, over exhibitors from long distances, the London growers have this no mean advantage. The comfort and saving to comparatively undisturbed plants is something as grateful as the convenience to our own selves of a long railway journey in a thorough carriage compared with the evil and upheaval of having "to change." I am aware of what has been the practice among growers past and present, and that on the side of later potting there lies the authority of the late George Lightbody, of patriarchal repute in Auriculas. It would be very wrong to deny the success of that method, yet my own experience points to equal safety and greater advantage from earlier potting. I deny plainly that potting in May is likely to induce autumn blooming. Those whose plants indulge in that ill-timed display have other causes to blame for it. It may be that they are rich in varieties of a naturally restless habit, which persistently will bloom twice or oftener in the year, treat them how you will. Or it may be that a collection has suffered from some summer maltreatment such as being kept too hot or dry. Upon plants in such distress the effect of moist cooling autumn weather will be a sudden joy capable of driving them out of their course, while if life itself has been in danger they may make attempt to flower in accordance with the instinct there is in vegetable nature that presses a dying plant to save its species by rushing into seed-bearing just as we might sometimes see an ill-conditioned Conifer expiring in a convulsive production of cones.

Auriculas will take no visible harm by being left undisturbed for a few weeks after blooming, and those entrusted with valuable seed-pots it is well to let alone awhile. But in early repotting there is not that fatigue, and there is not that check which light assertion and theory may attribute to it. Rather is the spent plant in better time relieved of fibres that have died and of stem become inert, while the white, young, vigorous roots, bristling from higher seats of life around the leafy neck, are ready for new food and less damageable than when grown longer. Other roots are also encouraged to push out, both by the need the plant has of them and in that very appetite which the relish of fresh soil creates; and should there, by ill-lap, as I have known it, be any distasteful element in the compost, which an Auricula soon discovers, there is the grand resource still left of time enough to try again and remedy the evil without the fatal loss of a season.

I have found these early-established plants settle down best to their work and as safely in autumn as at other times, go calmly on, too, contented to do a discontented act. Although I grow a few of the uneasy sorts, I have noted that the extent of my autumn bloom ranges only from about 2 to 5 per cent., this does not include the young seedlings of a year old or so, for these have tricks and manners of their own, and it is not excessive, seeing that the Auricula, as a member of the Primula family, may be expected to indulge somewhat in autumn blooms, even as will the commonest Primroses and Polyanthes.

F. D. HORNER.

Kirkby Malzeard, Ripon.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

White Mould on Auriculas.—If "R. D." will refer to the reports of the Scientific Committee of the Royal Horticultural Society, dating some two years back, he will find this subject fully discussed and "settled." Mr. Dombrain and some other Auricula growers described the white material as a sort of American blight, and some of the substance was submitted to Mr. W. G. Smith for examination, and that gentleman described it at once as an animal production. This idea was looked upon with disfavour at the time, and no one threw more stones at it (in a good-natured way) than the late excellent Mr. Andrew Murray, who wanted the stuff to be a fungus. Some one now took Mr. Smith's side, and said he had actually seen the insects embedded in the material on the Auricula roots, and the matter was at last settled by an exhibition of infected plants with the white substance and insects *in situ* on the occasion of the visit of the Queen. Mr. Murray then frankly acknowledged his error and described the insect.—A.

When to Plant *Tropaeolum speciosum*.—Many fail in getting this plant to establish itself, a circumstance which, in my opinion, must arise from planting it at the wrong time; for I find that by taking it up after it has commenced its growth, every bit that has a small portion of the fleshy part of the roots attached to it will live and grow as if nothing had happened. I manage to furnish the whole end of a house in this way, and I could now increase this *Tropaeolum* at least tenfold, as small pieces are cropping up through the border in all directions. Any one wishing to possess it will do well to obtain plants of it now and plant them at once, as by so doing they will have time to form fresh tubers before they ripen off in the autumn. The situation most favourable for their growth is the side of a north wall, or the shady end of a plant house, as there they are able to maintain their leaves fresh and green and free from red spider. In Scotland, where the climate is colder, this *Tropaeolum* grows very freely, and, by keeping it properly watered during the summer time, and giving it an occasional syringing, it may be had almost anywhere nearly as good as it is there, the principal thing being to maintain the foliage fresh, without which this plant never gets on. I find that wires or strings, strained vertically about 6 in. or 9 in. apart answer best to train it on, as then the young shoots continue their ascent instead of being diverted from their course and becoming an entangled confused mass.—S. D.

***Lilium Batemannianum*.**—"T. H. A. H." (p. 430) thinks that the figure of this Lily given in *THE GARDEN* (p. 366) is identical with that given in the Bot. Reg., 1839, as *Lilium aurantiacum*. We quite agree with him that the latter plant is the original *L. Thunbergianum* type. It grows from 12 in. to 18 in. high, and we have described it in our catalogue (No. 40) as the long-lost, beautiful, unspotted Lily figured by Paxton, and called by him *L. aurantiacum*, having large, erect flowers of a rich salmon-yellow colour, quite destitute of spots; its foliage and habit are of the true *L. Thunbergianum* type. But *Lilium Batemannianum*, as described by us in *THE GARDEN* (p. 396) grows from 3½ ft. to 4 ft. high, and in habit of growth and foliage resembles *L. Leichtlini* or *L. Maximowiczii*. The flowers are much more numerous, but smaller, than those of *L. aurantiacum* verum. If your correspondent would grow the two forms side by side, he would soon recognise that there is a great difference between them.—ALEXANDER WALLACE, *Colchester*.

Wild Flowers for the Garden.—"B." may well ask (p. 407) why these are not more used in gardens than they now are. With but little trouble a most beautiful border might be made with British plants alone, and, in the case of those whose gardens are large, I cannot imagine a more interesting experiment. Even here, within fifteen miles of Hyde Park, I have found and added to the garden—the wild Tulip (*T. sylvestris*), the Snake's-head Frillity (*F. Meleagris*) and its white variety, the Marsh Marigold (*Caltha palustris*), Water Forget-me-not (*Myosotis palustris*), the Yellow Iris (*I. Pseud-acorus*), Lent Lily (*Narcissus Pseudo-narcissus*), Water Lilies (*Nymphaea alba* and *Nuphar lutea*), Meadow Sweet (*Spiraea Ulmaria*), the Ivy Linaria (*L. Cymbalaria*), and several others of almost equal beauty. My list would be too long if those plants which have been collected from more distant parts of the kingdom were added, so I must conclude with one only, *viz.*, *Pinguicula grandiflora*, a large-flowering kind which is a gem amongst bog plants.—A. K., *Eastcott, Pinner*.

A Good Bedding Forget-me-not.—This is a seedling said to be an improvement on *Myosotis dissitiflora*, which it somewhat resembles, but it differs from that kind materially in being more compact and dwarfier, a more profuse bloomer, and, above all, in being much harder, as it has withstood the past winter with impunity, and the beds in which it is planted have not a vacant space in them, whilst those near them planted with *M. dissitiflora* are bare, all the Forget-me-nots having succumbed to the severe cold. Such a desirable variety as that above alluded to is well worth a distinctive name by which it may be known when it becomes more common.—W.

Lobelias from Cuttings.—Where a large stock of Lobelias is required true for beds and borders, nothing surpasses getting them from cuttings, as they grow so much more uniformly than from seed. We usually remove the flowers from a few dozen plants of each sort early in autumn, in order to induce them to make a little growth before they are lifted and stored in boxes for the winter. Early in spring the cuttings are taken off and inserted thickly in boxes of sandy soil in a moist heat, where they strike without much loss. They may then be planted in cold pits, where they make fine plants for turning out in May.—J. G.

Seedling Mimuli.—Some fine blooms of these have been sent to us by Messrs. Downie & Laird, Pinkhill Nursery, Corstorphine. They are large, rich, and well varied in colour and spotting, and of good substance.

CHIONODOXA LUCILLE.

This, the subject of the accompanying illustration, is without doubt, the finest addition that has recently been made to our list of hardy spring-flowering dwarf bulbous plants. Its habit at once reminds one of the two-leaved Squill (*Scilla bifolia*), as it rarely develops more than a pair of leaves. The blossoms, from five to ten in number, are produced on gracefully arching stems, from 4 in. to 8 in. high, and are each nearly 1 in. across, star-like in form, and of a beautiful clear blue tint on the outside gradually merging into pure white in the centre. As to its hardiness, there can be no doubt, as it has withstood the past winter with impunity, and flowers freely during March and April. Some misapprehension has existed as to its nomenclature, but now, we believe, it is clearly understood that *C. Forbesi*, which was considered distinct, is synonymous with *Lucille*. It is a native of Asia Minor, whence it was introduced by Mr. G. Maw, who discovered it a year or two ago at Nymph Dagh. W. G.

VEGETABLE CULTURE FOR MARKET.

BROCCOLI—This crop is grown by market gardeners near London chiefly under the shade of fruit trees, but in the

valley of the Thames there are acres of Broccoli in open fields. The early supplies of Broccoli brought to the market are produced in the west of England, where the climate is mild, and the heads produced there are infinitely superior in size and quality to those grown nearer London. In mild seasons Broccoli is so good and plentiful as to be of little profit to the grower. In the winter of 1878 many never brought their produce to market at all, but made use of it at home, so low were the prices offered for it in the market. In the market gardens about London, the Purple Sprouting, the Walcheren, Snow's

Winter White, and Cock's Late White are the kinds chiefly grown. The first sowing is usually made during the month of April on beds of rich soil. Sometimes, however, the time of year when ground will be vacant to receive the plants materially influences the time of sowing, for it is an important matter to have the young plants healthy and stocky at planting time. If sown so early as to have to be kept long in the seed-bed they become drawn, and consequently do not yield such good results. Another sowing is generally made in the middle of May; indeed, from this sowing the principal winter crop is obtained, and more plants are raised than are required, so that all clubbed and weakly ones can be discarded at planting time. A sowing of sprouting Broccoli is made in the end of June or early in July, from which is obtained a supply of Sprouts in the following March and April, a time when they are in great demand. When the young Broccoli plants appear above-ground they are first hand-weeded, and afterwards thinned by means of narrow hoes. As soon as they are strong

enough for transplanting they are planted in rows under fruit trees, or in some other shady situation, or in an open quarter, as the case may be. When planted between rows of fruit bushes, two lines are inserted in the intervals between every two rows; but if two drills of Potatoes occupy this space, then only one line of Broccoli is planted, and that between the two drills of Potatoes. Should the whole space under an orchard be planted with Potatoes, as soon as these are earthed up, Broccoli is planted between the rows without the soil being loosened. The Potatoes ripen before the Broccoli can injure them much, and when the Potatoes are removed the Broccoli has the whole space to itself. The trees lose their leaves in October; therefore the Broccoli, having the benefit of increased light, becomes invigorated, and during that month and November begins to afford a good supply of sprouts, which are not all gathered at once, even from the same plant, but at intervals as they become fit for use. The immense breadths of Broccoli grown in some of the market gardens render it almost a matter of impossibility to have all heeled

in the same as we often see them in private gardens; yet it is very seldom they are injured by frost, and the fine white, firm heads that may be seen by thousands in Covent Garden Market during the autumn are seldom surpassed, if even equalled, in private gardens. In the neighbourhood of Shepperton, in the Thames valley, may be seen breadths of Broccoli from 20 acres to 30 acres in extent, and from this place alone it is calculated that in the height of the season as many as 30,000 heads per week are sent to market. In some parts of Kent Broccoli is grown to a large extent, one



Chionodoxa Lucille.

grower yearly planting over 200,000 plants.

CAULIFLOWER.—With this it is hardly possible to overstock the market. It has the advantage over Broccoli in this particular, viz., that pickle merchants are always ready to buy up any quantity of Cauliflowers in summer, whilst for this purpose scarcely any Broccoli is used. In May, before Peas and Beans can be had at reasonable prices, good Cauliflowers realise good profits to the grower. Early Cauliflowers are usually grown under handlights, or are protected by old baskets or small boughs of evergreen trees. To provide plants for this purpose, a sowing is made on a well sheltered piece of ground or a warm open quarter, in beds, in the second or third week of September. The young plants are allowed to remain in the seed-bed until the end of October, or even the middle of November. Should frosty weather set in whilst the plants are in the seed-beds, they are protected by mats supported on short stakes 18 in. above the ground. Sometimes a stout plank is set on edge along the centres of the beds, and two rows of short stakes are put

one on either side to support it, and over this are placed mats. When the weather becomes too severe for them to be thus protected, and when they require to be transplanted, they are taken up and planted in frames or under handlights. The frames are placed in a sheltered spot sloping to the south, and are filled to within 8 in. or 9 in. of the top with ordinary soil firmly trampled down with the feet; over this better soil is sifted to a thickness of 3 in. or 4 in., and in this the Cauliflowers are planted 3 in. or so apart. In this position they remain until the February following and early part of March without any further care beyond that of closing the sashes to exclude frosts, cold winds, hail, or rain, and tilting them up at front and back during favourable weather, and on very fine days drawing them off entirely. Cold rains are very injurious to Cauliflowers, but a warm shower in February benefits them. Sometimes the plants grow so strongly that their leaves touch or press against the sashes; when that happens the sashes are tilted up at front and back night and day with pieces of wood or brick, otherwise frost would injure such leaves as touch the glass. Dry sand, kept in a shed for the purpose, is scattered amongst the plants two or three times while they are in frames, in order to guard against damp, and such plants as show signs of "buttoning" are immediately pulled out to give the others more room. Where room is limited and the weather appears mild, young Cauliflowers are often wintered in the beds where they are sown, or they are pricked off into raised beds of light soil not likely to be soaked with wet in winter. Here they are sometimes left unprotected, and at other times they are covered with hoops and mats. Continued dampness of soil and atmosphere is their worst enemy, as it induces growth so soft that it cannot withstand frost so well as that produced on high and dry ground. Where handlights are employed, an open field or quarter is lined off into squares measuring about 6 ft. each way. At every intersection nine Cauliflowers are planted in a sufficiently small space to be conveniently covered with cloches or handlights, which are immediately placed over them, and a little earth is drawn around the base of the lights so as to shut up all apertures. The empty spaces between the rows of handlights are planted with Coleworts. In spring these Coleworts are either thinned out, or entirely removed for market, and a crop of Cos Lettuces is planted in their place. As soon as the Cauliflowers have become established they are allowed abundance of air, and otherwise treated the same as those grown in frames. When the plants become too thick, they are all lifted from under the handlights and planted in open quarters or under other handlights.

Market gardeners generally begin to cut from Cauliflower plants raised in this way some time in the month of May, according to the mildness or otherwise of the season. The best growers seldom make many sowings of Cauliflowers; one or two in autumn, and one or two in spring being the usual number. The first autumn sowing, as before stated, is made out of doors some time between the last week in August and the third week in September; and the second one, in frames, in the last week of September or first week in October. From these two sowings Cauliflowers are obtained from the last week in April to the end of June. The first spring sowing, if the autumn one is a failure, is made in a frame in the last week of February or first week of March, or it may be made in the open border any time during the first fortnight of March; from this sowing a crop is obtained from the middle of June till August or September. The third sowing is commonly made in beds, in some open quarter, between the middle of April and the first week in May, in order to furnish an autumn supply. Different market gardeners have different times for sowing Cauliflowers, but it is well understood that

strong, grossly-grown plants do not stand the winter so well as medium-sized ones, and they are also more liable to "button." Moderate-sized plants are decidedly the best for mild winters, but in the event of very severe winters occurring, strong plants are the best. Cauliflowers which have been wintered in frames or under handlights are often planted on ground cropped with Radishes before the latter crop is marketable, and by the time it is so, and cleared off, the Cauliflowers will have gained good strength, when the ground will be intercropped with Lettuces. In other instances, fields are marked off into beds 5 ft. wide, with 1-ft. alleys between them, and these beds are sown with round-leaved Spinach. As soon as this is done, three rows of Cauliflowers are planted along the beds. The latter outgrow the former, which, by continual picking for market, is kept in check until it is eventually exhausted, leaving the Cauliflowers masters of the field. The autumn crops obtained from spring sowings are thinned out a little in the seed-beds, and, when large enough for handling, are planted where they are to remain permanently. Should the weather be dry at planting time, a pint of water, or a little more, is given to each plant, and the sodden soil is soon afterwards freshened up by the hoe, thus, in some measure, preventing evaporation. Late Cauliflowers are nearly always intercropped with some other vegetable, such as Lettuces, French Beans, Celery, Seakale, &c. Some large growers, however, depart from this rule, and save much labour; for, if intercropping be practised, people must be employed to keep down weeds by means of the hoe; but when Cauliflowers alone occupy the ground horse-hoes can be freely worked among the rows. The Early London is the variety used for the first crop by most market gardeners, but some use the Walcheren for that purpose. The Walcheren is the kind almost entirely grown for use after June, because it suffers less from drought than any other sort, and is not liable to "button." Snow's Winter White, an excellent sort, is, as a rule, regarded as a Broccoli; nevertheless, it has fine white, solid heads, and is largely grown to succeed the Walcheren, being harder than that sort. Snow's White, if sown together with the Walcheren in April or May, makes a fine succession to it, and comes in usefully till January. Early Cauliflowers are always sent to market, but those produced in summer and autumn are disposed of to a large extent to pickle merchants.

SPINACH.—During winter and spring Spinach finds a ready sale; but when other vegetables, such as Beans and Peas come in, it is little thought of. Market gardeners seldom grow it as a summer crop, as it "bolts" or runs to seed before many leaves have been gathered from it, and in that case it is by no means a profitable crop. The round-leaved sort is that which is used for spring sowings, the first of which is made in February, a second about the 1st of March, and another sowing or two at an interval of three weeks or thereabouts, just as empty space and convenience permit. The latest spring sowings are made on a damp, cool piece of ground, provided such can be obtained, as, thus circumstanced, better leaves are produced in hot weather than on dry and warm soils. In July, if the weather be moist, a sowing of the round-leaved variety is usually made on a spare piece of ground for autumn use. Early in August a large sowing of the Prickly-seeded or Flanders is made broadcast on fields or in rows about 8 in. apart. Some growers prefer the Flanders on account of its large fleshy leaves and hardy constitution, and it sells in the market better than the Prickly sort. By sowing in the first and last week of August and the middle of September, a succession of Spinach from October till May is easily kept up. Although during winter but few leaves are produced, the earliest sowings yield freely before then, and

the two latter abundantly in spring. Coleworts are frequently planted in a field of late Spinach, at 3 ft. or 4 ft. apart. In damp winters a large proportion of the roots may die, but in ordinary winters they retain their vitality, and produce abundance of large fleshy leaves in spring. No care is taken with this crop from the time of sowing till gathering beyond hoeing and thinning once or twice. Spinach for market is packed firmly in round baskets, and also in hampers of any size convenient for handling. Spaces under fruit trees are also often covered with Spinach sown broadcast; and as the trees are not furnished with leaves, they do not shade the plants. Open fields are also often sown with Spinach in beds, which are covered by throwing soil over them from the alleys; on these beds Cauliflowers are also planted, at the usual distances apart. By the time the Spinach has come well up the Cauliflowers will have become well established, so that the Spinach, which as soon as ready is removed for market, does not injure the Cauliflowers much. When the Spinach is removed, the Cauliflowers are permitted to have all the space; consequently the ground is gone over, hoed, and allowed to rest for a few days, when some soil is drawn to the Cauliflower plants.

VEGETABLE MARROWS.—The abundance of Vegetable Marrows to be seen in Covent Garden and the streets of London during summer and autumn gives some idea of the extent to which they are grown in market gardens. Although they are often sold at a cheap rate, yet the productiveness of the Vegetable Marrow renders it, in good seasons, one of the most profitable of crops. The jam and marmalade manufacturers use large quantities of Vegetable Marrows, and private individuals often turn them to a similar account. When well made, Vegetable Marrow jam is wholesome, and much better than some of the questionable jams which one often sees sold in the poorer shops. Early in March hotbeds are erected for producing Vegetable Marrows, the seed of which is either sown thickly in pots or pans of common soil plunged in the beds, or sown broadcast on a bed with a few inches deep of soil placed over the fermenting material. As soon as the plants show two rough leaves they are pricked into other beds or into pots. The usual method is to prepare a series of frames set on slightly heated hotbeds; on the surface of these place a few inches deep of soil, into which plunge 6-in. pots, filled with common garden mould to the brims, as thickly as they can be stowed together. Into each of these pots two Marrow plants are dibbled, and here they remain till planting time, hardening them off by gradual but increased exposure in fine weather. The first plantation is made out-of-doors during April, but the plants make little progress until the end of the month. When ridge culture is practised the ground is marked off in lines for them about 10 ft. apart, and each plant is about 6 ft. or 8 ft. asunder in the row. Where each is to be planted, a hole about 20 in. deep and 2 ft. or 2½ ft. wide is dug and filled with fermenting manure, which is covered over with the soil that has been thrown out in the excavation. Here the plants are planted, the contents of one pot being put in every ridge, and covered over with handlights or large cloches. A little earth is at first drawn around the base of the lights, so as to keep all close and free from cold currents of wind; and, in the event of frosty or cold windy weather setting in, mats or litter are also placed around and over the lights. Excited by the heat from the fermenting manure beneath them, and protected from cold overhead, they are almost as snug as in a hotbed, and, consequently, they soon take to their new quarters, form fresh roots, and begin to grow. When this is the case, the lights are tilted up a little on the south side, by means of half-bricks or small flower-pots, during favourable opportunities, but shut up at night. When growth,

however, begins to make rapid progress, the lights are left a little tilted up at night, so as not to injure the shoots that are pushing forward, and require more room than is afforded under their little glasshouses, until finally the lights are entirely removed, which will probably be in the latter half of May. From this plantation fruit is generally cut in the first or second week in June, depending on the warmth of the season. Large growers have generally from four to six plantations of Marrows, each succeeding the other by a fortnight, so that the last planting is made late in June. Midseason crops are planted on ground just cleared of Radishes. If the Radishes be not cleared at the time of planting, the Marrows are planted in every alternate alley between the beds, thus permitting the Radish crops to be removed at convenience. For the later crops, ground occupied by spring Spinach, Radishes, autumn-sown Onions, Cabbages, or Cauliflowers, forms a good medium. The space between the rows is not lost during the minority of the Marrows, but is cropped to within 2 ft. of them with Lettuces, in addition to which there are generally three or four lines of Cabbages or Cauliflowers planted along the centre of the space. Turnips also sometimes form the inter crop.

During the early stages of growth, if the weather be dry, little basins of earth are drawn round the plants to form a hole for the retention of water, of which they get a good supply until their foliage covers the ground. The plants begin to fruit when the vines are 3 ft. or so in length, and continue growing and fruiting until frost, drought, or mildew renders them useless. In a dull rainy season, provided it be warm, they thrive apace and fruit heavily; but in a hot and dry one they are short-lived and less profitable. When they are growing pieces of stone or brick are sometimes placed on the advancing vines as they are pegged to the ground, to cause them to root at the joints and thus afford themselves increased means of support. No care is, however, taken of them as regards thinning the overcrowded vines; but sometimes the growers mulch the ground with litter, which not only enriches it, but preserves its moisture, prevents to some extent evaporation, and keeps the fruit clean from grit. As soon as the plants begin to bear, every fruit is gathered when it attains a marketable size, for if left too long, they render the plant less fruitful. They are gathered three times a week, the gatherers being supplied with fruit-collecting baskets, a stick, and a knife. With a stick they turn aside the leaves of the plants in search of the Marrows, and they are thus enabled to go over the ground quickly. When each gatherer has filled a basket, it is carried to the outside of the plantation and emptied into a heap, or into large baskets, or a waggon stationed there to receive them. The trampling the Marrows undergo in the process of gathering does not seem to injure them much. In August some good fruits are selected and marked by inserting an upright peg alongside of each, and these are allowed to remain untouched till ripe, when they are cut and placed within frames or in exposed situations before the sun, so as to become thoroughly ripened. They are afterwards placed in a corner in some of the sheds, to await a convenient season for extracting and washing the seeds. After the middle of September Vegetable Marrows are commonly useless, and the demand for them diminishes; consequently, they are not after that time worth the ground they occupy. Sometimes they are cleared off the ground at once, and at other times they are left until frost completely kills them; but in all cases the haulm is raked off and carted to the manure heap before manuring or digging the ground, which is usually planted at once with Coleworts. Custard Marrows are grown out-of-doors on the same system as early Vegetable Marrows; but as they are weaker growers than

the latter, they are only planted about 8 ft. by 6 ft. apart. The ground is also, as a rule, mulched all over, and in the event of dry weather they get occasional good waterings. The marketable value of Vegetable Marrows varies very much; sometimes they hardly pay the grower, whereas at other times they are highly remunerative, much depending on the scarcity or abundance and the price of Peas, French Beans, Cauliflowers, and other vegetables. The chief variety grown is a selection from the old Cream Marrow, which is of first-rate flavour, hardy, and a prodigious cropper.

C. W. S.

THE KITCHEN GARDEN.

ECONOMICAL ASPARAGUS CULTURE.

ALONG with this I send a bundle of Asparagus cut from plants two years planted, and which have been grown without any special preparation of the land. As will be seen, the heads are not particularly large, as I am more anxious to secure a great number of quickly-grown, tender, medium-sized heads than a few of extra size. For this reason I cut last year a few of the largest, in order to equalise the growth, as the size of the heads is governed by the preceding year's shoots; and if we wanted them very large, I should encourage the largest stems by removing the weakly ones; but, as I have already stated, I last year cut those that were above the average in size, and the result is a good yield of heads about the size of those which I send, and no small ones; consequently, there is no waste. The land had previously been used for growing vegetables, and therefore was in fairly good condition, both as to depth and manuring. The plants, when planted two years ago, were one year old, and were strong for that age, having been sown thinly and further thinned out to about 5 in. apart, and when they were planted all weakly ones were rejected, so that a good average growth was by this means secured.

I should not recommend young plants to be raised on land much richer or lighter than that which they will finally occupy. I have seen instances of the bad effect of transferring plants raised on light rich land to that of a poorer character. The opposite case would not be so objectionable, although it is not desirable to plant half-starved plants raised on poor land at all if it can be avoided. The planting was done when the young shoots were about 2 in. or 3 in. above the ground, lifting them up carefully, so as to retain all the roots unimpaired; and they were planted as speedily as possible, as much exposure to the air would be injurious, and it is better to plant in dull weather. Lines were marked out across the plot 3 ft. apart, trenches were opened with the spade of sufficient width to allow of spreading out the roots, and, as our land is porous and often suffers from drought in summer, the trenches were taken out deep enough for the plants, when finally covered with about 1½ in. of soil, to stand in a hollow about 3 in. or 4 in. below the natural ground level. I should remark, however, that this hollow has since been filled up with compost formed of the clearings of the rubbish-yard, which is often of a light mellow character, containing a good deal of vegetable matter. Beyond a sprinkling of salt, this is the only manure which the plants have had, and they have never had liquid manure or water of any kind given artificially, although I should have given them some if time and circumstances had permitted.

I should state that when the plants were first planted it was intended for each to occupy a square yard, but I thought for a year or two no great harm would be done by putting in a double number, so that, although the rows were 3 ft. apart, the plants in the rows were only 18 in. asunder. I believe that this was a mistake, as well-selected Asparagus plants will profitably occupy at least a square yard, even on inferior soil, from the very first. The plants have seeded most abundantly, and I have never yet been able to spare the time to pick off the seeds in the way I should like, as seeding must be exhausting, and when the seeds ripen on the stems some may drop and grow, and perhaps be permitted to stand, unless a close eye be kept over the rows, in order to see that the spaces are left unoccupied. With this system of culture one need never be bothered with beds of old weakly plants, as one might plant a patch every year or two and destroy a corresponding patch, and so Asparagus culture might be brought on to a regular system of rotation.

E. HOBDAV.

[A very remarkable result for the time, though the benefit of such a system will be far more apparent as years go on than when the plants are young. The Asparagus was very delicately flavoured.]

GARDEN DESTROYERS.

A Tree Borer.—Great havoc is being made among the Sugar Maples in the province of Ontario by the Maple Tree Borer (*Clytus speciosus*), an insect which seems particularly busy among the trees which are planted in the streets. As a preventive measure it is recommended that towards the end of June, or the beginning of July, a coating of soft soap and lye, reduced to the consistence of cream, be applied to the bark of the trees on a warm day. Such an alkaline coating is found to be particularly objectionable to this insect, which seldom deposits its eggs upon such a substance; or if by chance they are deposited, the larvae perish in the attempt to penetrate. During the daytime these beetles are generally seen resting quietly on the trunks of the trees, but at night they are exceedingly active. During the months of July and August the eggs are laid upon the trunks of the Maples. The long fleshy grubs hatched from these have six legs, which may be said to be rudimentary, as they are useless for purposes of locomotion. By means of the rings or segments of their bodies, which they contract and extend alternately, the insects force their way through the wooden tunnels which they make in the trunk. They are furnished with strong horny jaws, which enable them to pierce the hardest wood. After penetrating through the bark, they lie dormant during the winter. On the approach of spring they penetrate the wood, forming numerous winding galleries in the trunk. At the end of the year the larvae become changed into pupae, and afterwards into the matured beetle, which forces its way out through the bark to attack other trees.—A. J. B.

Wireworms in Potting Soil.—To get rid of wireworms and other pests from potting soil, leaf-mould, &c., I find it a good plan to place it for a day or two in the hen pen. The cocks and hens turn over every particle, and I believe they pick out every grub and egg in a most effectual manner.—BROCKHURST.

ANSWERS TO CORRESPONDENTS.

Vanilla Tree.—Can you tell me what tree this is? It is mentioned in the "Times" as being planted largely in Paris, and now masses of purple bloom; it is also recommended for town planting in this country.—A. M. A. [Possibly the Japanese Paulownia, which bears flowers of a purplish-violet colour, but they are produced too early for the trees to make a good display in this country, except in very favourable situations.—W.]

Disa grandiflora.—Kindly inform me the best method of growing this lovely Cape Orchid.—A. E. [It should be grown in a cool, airy, and slightly shaded house, one having a northern aspect being most suitable. The compost should consist of equal parts of fibry peat and loam, broken charcoal, chopped Sphagnum Moss and sand in small quantities, and a layer of chopped live Moss should be placed on the surface. Water should be given liberally during the growing season, and an occasional watering with weak manure water will be beneficial. Frequent syringings should be given in order to keep the chrysids and other insect pests. The offsets should be taken off as soon as rooted, or the flowering stems will be weak.—W.]

Willow Beetles.—What are the enclosed? For the past three years they have entirely spoiled the whole of our Willow beds, consisting of about an acre and a half.—F. D. [The beetles sent belong to the large family Chrysomelidae, the members of which are plant eaters, and often do very great injury. The name of the species which is so destructive to the Willows in question, is *Phratora vulgatissima*. Collecting and destroying them is the only way of getting rid of them, a plan difficult to effect on a large scale.—W. S.]

Grubs Attacking Carnations.—What is the name of the grubs enclosed? and how can I best clear a bed of Carnations of them? One is found at the root of each plant, eating the fibres, and of course killing the plants. The latter were turned out of pots this spring.—B. O. [The grubs sent belong to the family Tenebrionidae, and are known as leather jackets. They should be searched for whenever a plant appears in the least unhealthy and destroyed. There is no better remedy than continually hunting for the grubs, which will be found very near the surface of the ground.—W. W. S.]

Sorrel in Ferneries.—I have a hardy Fernery which is covered with Wood Sorrel. Is it likely to injure the Ferns?—S. H. [No; that is, it kept within bounds.]

Names of Plants.—W. A. D.—*Ornithogalum nutans*, *Scilla italica*. Sir W. M.—*Ornithogalum nutans*. F. B.—1, Double Peach (*Amygdalus persica* fl.-pl.); 2, *Pyrus (Malus) floribunda*; 3, *Cupressus Lawsoniana*; 4, *Aerides crispum*. A. D.—We cannot undertake to name double *Petunias* or double zonal *Pelargoniums*. J. S.—*Lilium elegans* var. *altissimum*.

Questions.

Camellias and their Various Modes of Culture.—In the article on this subject (p. 413) "Cambrion" advocates that Camellias should have full exposure to the sun, both when under glass and when placed out-of-doors. Until a few weeks ago, when I heard it, I portended that Mr. Hovey, of America, had said that he placed his Camellias out-of-doors in front of the glass in the sun. I thought it was essential that all Camellia plants, even when placed out-of-doors, should be protected from the direct rays of the sun to prevent the foliage from being blistered or injured. It would be a great convenience to me if I could place my Camellias out-of-doors from the end of June to October in an unshaded place, and I should like to know whether I could do so without risk of injury to the foliage. I have had the foliage (old, not young growth) of plants in an unshaded, freely-ventilated house blistered by the sun's rays in the early part of April, and I cannot help thinking that there must be some risk in placing them out-of-doors in a sunny place, especially from the effects of a bright sun following a shower of rain.—ENQUIRER.

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"This is an art
Which does mend Nature : change it rather : but
THE ART ITSELF IS NATURE."—*Shakespeare.*

AN ERROR AS TO ASPARAGUS.

REFERRING to large Asparagus, a writer ("J. S.") in last week's "Gardeners' Chronicle" makes the following remarks, which are an echo of what is commonly said on a subject of some importance to all who care about Asparagus culture: "In the matter of cultivating Asparagus I believe we have a good deal to learn, for in few gardens do we find it at all equal in size to the immense heads sent over from France. The delicacy and rich flavour of these, however, are, in my opinion, quite spoiled by the blanching to which they are subjected, as instead of being tender and eatable from 4 in. to 6 in. or so of their length, only just the tops can be used, and even that portion compared with such as is exposed to the full influence of sun and air, is insipid and watery, and yet there are many who still give it the preference." There is an amount of error in such utterances which would make them amusing if they were not also detrimental to a fair understanding of the subject. The delicacy of blanched Asparagus is in no way spoiled by the process of blanching. It is a gross error to suppose that "only just the tops can be used." The writer's ideal of Asparagus is that it ought to be from 4 in. to 6 in. in length. I have frequently eaten the Asparagus which he states to be so useless perfectly tender 8 in. in length. It is also a mistake to suppose that this Asparagus is "insipid and watery" in any case where it is not badly cooked or in bad condition from being kept too long after cutting. There is also an important error implied in the paragraph, and that is, that only French Asparagus is blanched. Now, as a matter of fact, English market-grown Asparagus is, to a great extent, blanched the same as the French, and is none the worse for it. On the other hand, much French Asparagus comes to the London markets green, and is used in that state—that, for instance, which comes from the neighbourhood of Toulouse, while the Dutch Asparagus is far more blanched than English or French, being quite white throughout. The question of blanched or unblanched Asparagus has, happily, nothing to do with culture, which may be carried out without any reference whatever to whether we want it blanched or green, but the error as to the quality of blanched Asparagus is so common, and so often repeated, even in professional journals, that a few words on the question of blanching may not be amiss.

Errors about it have mostly arisen from the fact that some who purchase large French Asparagus frequently do not know how to cook it, and serve it with no part tender but the tops; they also often get it after it has been a long time exposed in shop windows and in markets—a most unfavourable condition for a vegetable, which loses its flavour very quickly when exposed to the air. The cookery which suffices for common small green Asparagus will not do for these large and fine specimens. They require to be boiled, and are boiled by all cooks who know how to treat Asparagus, standing erect in the water with the tops just out of it, all the stems being cut exactly the same length. The stems are then boiled till tender, and in this process the tops, exposed for about 1 in. of their length, are also cooked tender.

Recently I had an interesting test of this matter. A gentleman taking the keenest interest in all culinary matters spoke to me concerning this very subject, and avowed the usual prejudice about the green Asparagus. I told him about

the cooking of it, which seemed to strike him as being worthy of trial, and he at once resolved to try one of the best French samples procurable; I at the same time procured for him one of the very best English samples slightly blanched, so that he might make a comparison, feeling certain that he would give preference to the English Asparagus. This was not so; the large and fine French specimens, properly cooked, were found tender throughout, and of the most delicious flavour. All those who really know anything about Asparagus, such as Mr. Webber, and many of the people belonging to Covent Garden, know all this perfectly well, as anybody may find on speaking to them on the subject.

There is really a good deal to be said for the blanching of Asparagus which is supposed to be merely a matter of fashion, and perverse fashion. It is not likely that growers, who have to live by cultivating Asparagus, and who, as a matter of fact, satisfy the requirements of the most critical and most accomplished cooks that are known, would go on for years cultivating Asparagus in a vicious way. I have myself made numerous and repeated comparisons as to the flavour of Asparagus, and know it to be most delicate and excellent in the case of many blanched kinds, such as one gets from Argenteuil, or from Mr. Harwood, of Colchester, or from some of the great growers of the west of London, whose Asparagus is generally blanched, but not quite so much as that grown about Colchester; but all such tests must be made under fair conditions; the cookery must be right, and the Asparagus must be fresh. On the other hand, many samples of small green Asparagus are also delicate, and somewhat distinct in flavour from that which is blanched, but mostly when the young points do not push far out of the ground. Then, again, I have certainly found many specimens of long green Asparagus deficient in flavour, and in several cases without even the natural flavour of Asparagus. Whether this results from exposure or from the peculiarity of the soil, I have not yet ascertained. It may be soon noticed by those who watch the shoots of Asparagus how very soon in warm days those exposed begin to get scaly, and even to break out into buds, in which case, if not cut promptly, they will certainly soon be useless for the table. Herein there is a reason for blanching apart altogether from the question of flavour, which many good judges know well to be superior in the case of the finest blanched Asparagus. If, when properly cooked, the blanched stem be tender and well flavoured, it is manifestly an advantage to the grower to increase the length and size of this stem by the process of blanching. Instead of allowing his shoots to come up and break forth into very small spray, by this simple process he conserves, as it were, the strength of the rising shoot in the form in which it is most profitable both to him and the consumer. A bundle of these large, long, and well-grown shoots, not broken out into scaly or green matter anywhere, is a very different thing in the market from one of green points, keeping better and cooking better. In private gardens it does not matter so much if people indulge their fancies as regards eating the green points only; but in market gardens it does make an essential difference to the grower, whether he blanches his Asparagus or not, because in that way he adds to the size and length and weight of the saleable portion of his produce. Some may say that this may suit him, but not the consumer. The answer of the best cooks, good judges, who have fairly tested the subject, is that the flavour is best and most delicate when the Asparagus is blanched almost to the top—is blanched, in fact, so as to show only the pink top, as is the case with the best French and English Asparagus.

Since writing the above, I have tried *dai'y* for nearly a week samples of Asparagus cut at the same time, and noted a

marked deterioration day by day, the flavour changing towards the fifth day to an offensive bitter one, and very watery. This was English Asparagus of excellent quality, grown at Colchester. The foreign Asparagus is frequently in a worse condition as to age than the above sample, for naturally Asparagus cut in another country, and, perhaps, experiencing the delays of two markets, and afterwards being exposed in a shop, can only be in a condition to mislead as to its quality when gathered fresh. Few vegetables lose their good qualities sooner from exposure to light and air; grown at home, such fine Asparagus would be found all that could be desired in flavour. V.

VEGETABLE MARROWS IN MARKET GARDENS.

I HAVE read the remarks on Vegetable Marrows by "C. W. S." with considerable interest—not only because I see yearly a large quantity raised for market, but also because of the great liking I have for the fruit as a jam-making product. In this locality, where there is less anxiety to secure early Marrows than is found nearer the metropolis, seed is commonly sown in drills at about 4-ft. intervals, of course thinly, seldom earlier than the middle of May. If plants so raised are later, at least they are more firmly established, and growers hold that fruit is produced earlier on such plants than upon those planted out from frames. That the soil is not so rich as is found in beds fully prepared may lead to this result; but, the plants being thicker, the quantity of fruit per rod is not less, whilst the attention required is but little. It is not unusual to see Runner Beans sown wide, and rows of Marrows between them. Of course, whether the seed be sown in drills or dibbled in in hills at 4-ft. intervals, rows are still produced. It is so easy to save a large quantity of seed, that at sowing-time it is seldom spared. A thick plant, if it escapes the slugs, can soon be thinned; but a thin plant is not so easily remedied. With that conservative unreason that so thoroughly characterises the Londoner, the Long White Marrow is almost the only kind that can secure a sale, and if this be of the ribbed form so much the better. In the matter of flavour and productiveness, some of the green kinds excel the Long White, but, good as they may be, it is useless to grow what the public will not purchase. The comparatively early stage at which the fruits are cut for market affords early and most useful relief to the plants, and thus the produce is far in excess of that obtained from plants that have to carry two or three large fruits on them for seed. For the production of preserve, or, to call it by its more homely designation, jam, the Vegetable Marrow stands unrivalled. It can be relied upon to produce a crop of fruit at the very cheapest rate when all others may fail. The white-fleshed Marrow naturally produces the palest jam, but the flesh of the darker kinds, and specially that of the Ohio Squash, not only produces the richest colour in the preserve, but also the best flavour. To make good jam the fruits should be well matured, but not ripe; that is, they should be fully grown, but the skins should not have begun to harden—then the flesh is solid and contains the least proportion of water. Much depends upon the making, but that is, like all cooking, a matter of culinary experience. When well made it is, without doubt, one of the pleasantest and most wholesome of all preserves. A. D.

EARLY AND LATE PEAS.

NOTHING in the vegetable way shows the backwardness of the spring more forcibly than the Pea crop, for while in ordinary seasons we always gather Peas at latest by the end of May, they will have to come on fast if we get any much before this month is out, although sown and treated in the ordinary way, and nursed on in a warm sunny border. There is, however, every promise that Peas will be in great abundance by-and-by, as I never remember to have seen them more vigorous and healthy than they now are. This is owing to the heavy rains which we have had and the few days of real growing weather between the rainfalls, conditions that just suit Peas and most vegetable crops, all of which are now growing most satisfactorily. In regard to Peas, it should be borne in mind that although they look so well now, a week or two's strong sunshine may so dry the soil as to bring on mildew, a pest which, when once it gets hold of the leaves, is fatal to the bearing properties of the plants. Nothing tends to ward this off so well and keep the plants in health as mulching the sides of the rows heavily with stable manure, which not only keeps the soil cool, but prevents in a great measure the escape of moisture. In light shallow lands it is next to impossible to grow good Peas without mulching, for should they be watered it is of little use, as before the water has time to soak down the dry, heated air

draws it out, and leaves the roots that it attracts near the surface famishing more than before.

For early and mid-season crops I am averse to the use of manure, as I find that it induces the plants to make too much haulm, but for those expected to yield a supply till late in the autumn, some stimulant of this kind is necessary, as it is surprising the difference there is in vigour between those sown now and others that have been put in up to this time. To make up for this deficiency of strength, they must have something extra on which to feed, and this is, perhaps, best afforded by digging and preparing trenches after the manner of those got ready for Celery, except that after they are finished, they should be to a greater extent filled in, so as to leave them only about 2 in. or 3 in. at most below the general ground level. This will be sufficient to admit of flooding them with water when necessary, which, if they are expected to bear well, will be often after they get into bloom and begin to show pods, as that is the time when their energies are taxed most, and, to save exhaustion, every pod should be picked when ready, whether the Peas may just then be required or not, the maturing of seed being a great drain on the plants. After trying many kinds for late sowing, I find none better in quality, or more productive, than the old British Queen, which all through the summer and autumn is a Pea of sterling merit, and one that may be always relied on. This and *Ne Plus Ultra* are the only two tall kinds that I care about, and, although they have been in cultivation a great many years, they are still unsurpassed. S. D.

THE FLOWER GARDEN.

Haberlea rhodopensis.—At pp. 375 and 430 of THE GARDEN a description is given of this very interesting plant, which we believe will prove to be one of the very best of recent introductions amongst hardy rock plants. As we have grown this little gem for several years on our rockwork, a hint or two as to its successful cultivation may not be unacceptable. We have treated this plant in the same manner as the Pyrenean *Ramonda*, i.e., we have planted it on the north side of the rockwork; therefore the sun never directly reaches it. We grow it in fibrous peat, and fix the plants, if possible, into the fissures of the rockwork, so that the rosettes which it forms hang in an oblique position, just as they do in their native country. It succeeds well in this way; but if no rockwork be at hand it may be grown equally well on the north side of a *Rhododendron* bed. We have it thus situated quite close to a stone edging, a way in which we also grow the *Ramonda*, and the *Haberlea* flowers profusely every year in May and June. Established plants will produce from six to seven flowers on a stalk, and form quite a lovely bouquet. The evergreen leaves are of the same firm texture as those of the *Ramonda*. The plant is very hardy, having withstood our often very hard winters without any protection quite unharmed.—OTTO FRÖBEL, *New Munster Nurseries, Zurich*.

Narcissus pumilus (pp. 338 and 430).—The plant figured by Herbert in his "*Amaryllidaceae*" under this name is very small, and may possibly be a starved form of *N. minimus*, the smallest of all the *Daffodils*. It is certainly not referable, as a garden plant, either to *N. minor* or to its broad-petalled form *N. nanus*, both of which bear flowers three or four times as large. The *N. pumilus* of Redoute's "*Liliceae*," t. 409, is a small Grassy-leaved plant bearing a solitary white flower, and is supposed to be a variety of *N. dubius*. Mr. Williams's plant is doubtless either *N. minor* or *N. nanus*, which have bright and effective flowers, and bloom early, as does also *N. minimus*, albeit a much smaller plant. If Mr. Williams has *N. cernuus* and *N. moschatius* true, they are readily distinguishable; and if grown in masses the distinctions are still more apparent. Apart from size and colour, *N. moschatius* never produces double flowers, while of *N. cernuus* there are two distinct double varieties.—B.

Herbaceous and Alpine Flowers at Manchester.—Herewith I send you a list of the thirty-six plants to which the first prize was awarded in this class at the late Manchester show. It is difficult in great exhibitions, like that in question, to find a suitable place for these denizens of the valley and the mountain; nor can I say that the site chosen for them at Manchester was a happy one. The Pansies and Violas in particular were placed on the ground as an edging to groups of large plants, and were, in consequence, almost in obscurity. Among the plants shown by Mr. Brockbank, I noticed a very dwarf and unique specimen of the old *Trollius europæus*—quite a miniature compared with the type. *Meconopsis Wallichii* and *nepalensis* were in excellent condition, but not fully developed. There was also a large mass of the new and beautiful *Saxifraga Wallacei*, a kind seemingly intermediate between *S. Mawi* and *S. ajacifolia*. I need scarcely add that those

who would exhibit thirty-six herbaceous plants on a given day would have to grow nearly sixty, and I was told the reserve in the case under notice was equally interesting as those exhibited. The following are the names of those shown, viz., *Meconopsis Wallichii* and *M. nepalensis*; *Saxifraga Crotedolus*, *S. pyramidalis*, and *S. Wallacei*; a beautiful incrustated *Saxifraga*, probably incrustata, erroneously named *S. serratifolia*; *S. lantoscana*; *S. atropurpurea*; *Aquilegia vulgaris*, a fine dark variety; *A. Skinneri*, true red and yellow; *Lithospermum prostratum*; *Trollius napellifolius*, *T. altaiacus*, *T. orobus nanus*; *Orobis vernus*; *Primula amena lilacina*, *P. a. magenta*, *P. japonica* (a fine pan), *P. luteola* (beautiful); *Dodecatheon Jaffrayanum*; *Polygonatum giganteum*; *Symphytum variegatum*; *Cypripedium spectabile*, *C. acule*; *Iberis gibraltarica*; *Lychnis alpina*; *Myosotis Warleigh Surprise*; *Sempervivum montanum*; *Caltha palustris* (double); *Doronicum caucasicum*; *Funkia alba marginata*; *Trillium grandiflorum*; *Claytonia sibirica*; *Phlox setacea*; *Convallaria majalis striata*; and *Ramondia pyrenaica*, a fine mass.—THOS. WILLIAMS, Ormskirk.

Arnebia echioides.—The Borage-worts afford us some of our handsomest border flowers, and the subject of the accompanying illustration, though not so showy as some kinds, is certainly amongst



Arnebia echioides.

the most remarkable. It grows about 1 ft. high, and has lance shaped leaves from 8 in. to 10 in. long, covered with short, dense hairs. The flowers, which are of a bright primrose-yellow, have five black spots on the corolla, which gradually fade to a lighter shade, and finally quite disappear. It is perfectly hardy, and succeeds either on the rockery or in a well-drained border, and apparently prefers partial shade. It is a native of the Caucasus, Northern Persia, &c., and, though it has been introduced some considerable time, it is still amongst the rarest of our cultivated hardy flowers.—W. G.

The Woodruff (*Asperula odorata*).—This interesting British plant, with white-scented flowers, produced usually in May, but, like all other plants, later than usual this year, is well adapted for planting at the foot of such trees as *Arbor-vitæ*, or other evergreens, in order to furnish the bare ground commonly seen at their base. Its flowers have a scent somewhat like that of new-made hay, and if cut and dried, the plant is said to be a preventive of moths in woollen and other fabrics. The plant is easily increased by division of the root when growth begins in spring.—E. HOBDAV.

Time for Re-potting Aciulias.—I feel sure that all Aciulias growers will join me in thanking the Rev. F. D. Horner for his very interesting note of last week, and will now feel quite safe in following Mr. Douglas in the advice he gave as to early potting. At the same time it is evident that there are two opinions, and it will be interesting to note the results if Aciulias growers will keep a record of their experiences for future use. We commenced re-potting ours only on Monday last, so the whole stock will be late

potted this year. I shall keep a careful record of the results.—BROCKHURST.

TREES, SHRUBS, AND WOODLANDS.

RHODODENDRONS AT CAIRNSMORE.

At the very foot of the huge mass of granite, 2300 ft. high, which bears the name of Cairnsmore of Fleet, lies the pleasant, well-wooded park which surrounds the house of Cairnsmore, the residence of Major and Mrs. Colvin Stewart. It would take a large space to describe the charms of the park and pleasure grounds, musical with running water and the song of birds. Yet soft and rich as are the changing scenes within little more than a stone's-throw of the house, the visitor is not allowed to forget that he is in a sub-alpine region. For even should the impending mountain, with its grim precipices, deep glens, and purple moorlands be for the time hidden by the thick foliage, at every turn there are to be seen huge monoliths of granite, sometimes so long and slender as to be used where usually poles or posts would be employed, as, for instance, in the hay-shed, the roof of which is supported by granite pillars about 14 ft. high; and in the glen there may be seen a light bridge thrown airily across the burn from crag to crag, which, on closer inspection, turns out to be a single gigantic plank of granite.

But the *specialité* of Cairnsmore are the Rhododendrons. For many years Major Stewart has been an enthusiastic cultivator of this delightful shrub, and as the climate, moist and mild (like all the west of Scotland), and the soil (granite débris mixed with deep peat) are all that could be desired, the amplest success has rewarded his efforts, and he is now the owner of probably the finest specimens, if not of the largest collection, in the south of Scotland. The lodge is approached by a long drive through a glen, down which rushes a mountain stream through a rough wood where have been planted many hybrid Rhododendrons which promise, when more air and light is given them, to form a woodland scene probably unique in this country. On entering the lodge gate, the first thing that arrests the eye is a magnificent bush of the Cairnsmore Scarlet, a seedling which is said to have been raised there about thirty years ago, and which retains much of the arborescent habit of the Indian *R. arboreum*. This bush overhangs the approach, is 15 ft. high, and loaded with bloom. In pleasing contrast is a large bush of Cunningham's White, which makes up in quantity what is lacking in quality of the trusses. Passing along the approach, may be noticed on the right, at some little distance, a long border surrounding the garden walls filled with thriving Rhododendrons, of which there is something to be said presently. Some fine bushes of limbatum, loaded with Cherry-coloured blooms centred with white, next attract attention, and a little further on is a display of colour which for freshness and richness the writer does not recollect to have seen equalled. An immense bush of the Cairnsmore Scarlet, about 17 ft. high, absolutely crowded with brilliant blossom, is placed in striking contrast with a large double white Cherry. The contrast is so exquisite, backed up as it is with the tender green of a giant Beech, that most people would feel rewarded for a very long journey by this sight alone. But there is a great deal more to see. Returning to the long border round the garden walls, the visitor is introduced to some of the choicer varieties. The Major has for years been working plants upon their own roots, on which he finds that, unlike Roses, they are much more robust than when grafted. From these plants round the garden walls he has obtained a great quantity of layers.

Perhaps the first blooms to catch the eye are those of a true scarlet, which came to Cairnsmore years ago misnamed Louis Philippe, but which is quite unique in colour, being indeed truly scarlet. This is now called the Major, and if it finds its way into the market under that name, is worth looking after.

An exquisite white flower, with a quantity of dark purple spots, named George Cunningham, and sent out by the Lawson Seed Company, is worthy of special attention, as the flowers are quite distinct and the foliage excellent. Among the young plants which have not yet bloomed at Cairnsmore one is struck by the vigorous growth and immense leaves of W. H. Punshard (Waterer), and the neat foliage and compact growth of Lady Ilchester. Lawson's Sikkim hybrid Thomsoni is a free bloomer and very pretty; Sun of Austerlitz, a fine carmine and of grand habit; Verschaffelti, rosy-white with dark markings; Broughtoni, with handsome leaves and bright rose flowers; Altacrense, full of crimson bloom; atrosanguineum, of a fine blood-crimson; Auguste Van Geert, with immense heads of a cherry colour, and a beautiful unnamed sort, garlanded with rosy blooms in great profusion, were at the time of the writer's visit the principal varieties in bloom, but a great many other sorts were to follow, which have been delayed beyond their usual time by the ungenial season. A walk round this collection does more to convince the visitor of the mistake usually made in planting masses of the common *Rhododendron ponticum*, to the exclusion of these far more beautiful and interesting varieties, than pages of writing. Another irresistible conviction to which one is led is the superiority of plants on their own roots. Peat is accessible in many places, but pure peat out of a Scotch Moss will not grow American plants. It must be mixed with an equal proportion of sharp sand, the coarser the better. Sea sand, if it is coarse enough, does perfectly well, and a little good manure at time of planting does wonders to help robust growth. Even where peat is not available, *Rhododendrons* will grow and flower well in good loam not approaching to clay or chalk. They should, however, be supplied with manure and leaf-mould mixed with sand in order to become established. One more word: Let them not be exposed to cold cutting winds in winter, or to the full blaze of sunshine in summer. The former destroys the foliage, and the latter burns up the blossoms of many delicate kinds, and thus shortens the flowering period. In choosing a spot for choice *Rhododendrons*, let the winds be broken by surrounding but not overhanging trees or adjacent buildings; let the sun have frequent but not unbroken access, and let the ground be thoroughly drained before preparing the beds.

I cannot close my notes upon the Cairnsmore *Rhododendrons* without noticing a very remarkable circumstance in connection with them. The pyramids of blossom seem to have the property of attracting all the queen wasps for miles around, and Major Stewart has a very ingenious and thoroughly effective means of destroying these. A strong india-rubber band is secured by a string about 3 ft. long to the wrist. Armed with this, the sportsman, for so he may be termed, waits till a queen wasp settles on a *Rhododendron* (and on a sunny morning he has not long to wait), when, taking a steady aim, he fires the india-rubber band off the thumb of the left hand, and rarely fails to knock the wasp senseless on the ground. In this way from twelve to twenty queens were secured in one morning during my visit, and that of course represents the destruction in an easy way of so many nests.

SALMONICEPS.

A Beautiful Elm.—Mr. Cole called my attention the other day to a very beautiful Elm in Kensington Gardens, every branch of

which is feathered from top to bottom with young twigs, as if a colony of Ferns had established themselves over the whole tree. It forms a remarkable contrast to the other bare-branched and bare-stemmed Elm trees in the same park. It is a variety of the Dutch Elm, and the curious growth of twigs in question is owing to numerous excrescences developed on the branches and stems.—V.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS.

The Vanilla Tree.—Some foolish person has been writing a note in the "Times" about tree planting in Paris, as follows: "Any one interested in the planting of squares or boulevards, and with time to spare, would find a trip to Paris well repaid by a view of the Avenue d'Essling, now a mass of purple bloom, which quite eclipses the Chestnuts so familiar in this city." The Vanilla tree, with which that avenue is planted, has very handsome foliage, and would quite stand the London climate, making a pleasant variety and growing rapidly." This has caused many puzzled persons, who only know the Vanilla as a delicate hothouse Orchid, to ask what can be meant. The writer can only mean the common Paulownia, but he is courageous enough to write to the "Times" without taking the trouble to ascertain the proper name of the tree. Of course he also recommends it for use in London, without taking the trouble to enquire how it actually grows there, where it lives, but never makes any such growth or flowers so freely as we have noticed it about Paris. On warm soils in the south of England, and not far from town, it does much better and sometimes flowers freely. The Catalpa is a much better tree for London, so far as we have observed, and both grows and flowers very freely, even in the centre of the town.

Constricted Bark.—This disease is occasioned either through the action of the roots becoming too feeble for the proper support of the tree, or through very dry cold air playing upon the trunk and branches of a tree which has become exposed. It is occasionally shown by the bark becoming indurated and losing its elastic properties, whereby the sap vessels get confined and their proper functions suspended. In the Plane tree the outer layers of bark peel off; in the Oak they become torn longitudinally; and in the Beech stretched horizontally. When in this hide-bound state the trunks often become covered with Mosses and Lichens, and are preyed upon by insects. The only sure remedy is scoring the trunk, and perhaps the main branches, right through the bark from the top to near the roots. The operation may be safely performed about midsummer, and the relief given to the tree will become apparent directly. We have seen old Apple trees renovated by scraping or stripping off a considerable portion of the rough old bark, and hide-bound young ones instantly revive after scoring. By leaving the inner layers of bark uninjured, considerable liberties may be taken with the rough external coating.—A. J. B.

Canker in Timber Trees.—This disease, though more frequently found upon fruit trees in orchards than amongst timber trees, sometimes attacks both the Elm and the Ash upon very wet soils, the drainage of which is imperfect. It is more especially found in low situations, where there is not a free circulation of air. It may also arise from an unwholesome substance in the soil becoming lodged in the vessels of the young shoots, causing blisters near the buds, and at the bases of larger branches. The parts affected are generally chosen by insects, whose larvæ keep the diseased spaces open by feeding upon their margins. It is not unusual to find fast-growing trees in the above situations attacked by canker. The only effectual remedies for the disease seem to be good ventilation by means of open cuttings or rides in the woodlands, and thorough drainage.—A. J. B.

Lilacs.—These are now doing so much to relieve the ugliness of many parts of London, that one regrets that the many beautiful kinds grown in Continental gardens are not also grown here; and it is to be regretted that the Continental way of pruning the Lilac bush, that is to say, thinning out the shoots so as to induce a stronger bloom, is not carried out with us. The tendency of the Lilac to ramify into a number of small shoots frequently causes some of the varieties to produce very small flower-shoots, which a little judicious thinning would remedy. There are surely no shrubs more worthy of our attention than the different kinds of Lilac.

Hardiness of Emborrhium coccineum.—It may interest the readers of THE GARDEN to know that two fine specimens of this plant have lived through the late severe winter, and are now flowering well. I have lately measured both; one is quite 20 ft. high and 8 ft. through, and is flowering freely; the other is in the American Garden, which is in lower ground and in a less dry position; consequently it lost the chief portion of its leaves during the winter, but the wood is uninjured. It is 25 ft. high and 16 ft.

through, and as every twig is bearing flowers it resembles a mass of fire. Such trees as these are worth a long journey to see.—SAMUEL HORSMAN, *Combe Royal, Kingsbridge, Devon.*

Cerasus Rhexi.—Let me strongly recommend this shrub to the attention of your readers. It is one mass of bloom, and the most striking object I have seen for a length of time.—A. R., *Bromley.*

IDESIA POLYCARPA CRISPA.

ALLOW me to direct attention to a curious case of dimorphism which has appeared in two plants of the *Idesia polycarpa*. The general form of the typical *Idesia* is too well known to need mention; we shall, therefore, content ourselves with figuring and describing the monstrosity in question. This remarkable variation appeared for the first time at the Museum of the Garden of Plants in Paris in 1875 in a plant of about 8 ft. in height and in a single shoot. In the following summer another plant, stronger than the first one, produced two shoots, which were identical with the growths of the previous year. In 1876 several other plants developed similar shoots; it is probable, therefore, that this variation may become permanent. The following is the description of the variety of which we are speaking: The shoots are denuded at the base, somewhat twisted out of shape, with uneven surfaces, showing elevations and depressions here and there. The leaves are of different shapes and sizes, with long leaf stalks, and frequently reach a length of from 4 in. to 8 in., and even longer. The whole of the leaf is corrugated and twisted irregularly, the veins and nerves being whitish.

The leaves of the variety consequently form the strongest possible contrast to the smooth, regular, well-shaped leaves of the parent plant, the monstrosity being made all the more remarkable by the shoots bearing normal and abnormal varieties of leaves growing on the same stalk. Practical men will tell us that this transformation is the result of an accident, while, on the other hand, botanists will say that it is an anomaly. These methods of accounting for the fact, although apparently sufficient, are in reality worse than insufficient, seeing that they simply put the difficulty on one side instead of solving it. The reflective mind, on the other hand, asks itself whether any of these changes of character in plants can be called accidents. Are not all those phenomena, which we call abnormalities, accidents, and anomalies, just as much governed by natural laws as those which we call normal? If we call such phenomena accidents, why should we not apply the same term to the thousands of varieties which are constantly being discovered amongst seedlings? Are not the latter phenomena analogous to the former? We commend these observations to the attention of vegetable physiologists.

Whatever may be the cause of this curious variation, the plant of *Idesia polycarpa crisper* is none the less interesting to both horticulturists and botanists. The *Idesia polycarpa*, which was formerly also called *Polycarpa Maximowiczii*, was, at the time of its introduction from Japan, much vaunted as a fruit tree, an idea which still obtains amongst cultivators. It does, indeed, bear fruits, botanically speaking, but, instead of being good to eat, they are, on the contrary, dry, hard, and disagreeably bitter.

E. A. CARRIÈRE.

A PUBLIC NURSERY.

THERE is no more pressing want for our public parks and gardens than a good nursery on ground belonging to the State and in pure air for the main supply of the trees and shrubs now required in the public parks and gardens of London and its neighbourhood. We find the following not very hopeful reference to this subject in an article on this subject by Lord Henry Lennox in the current number of "Time": "I am one of those who are strongly of opinion that we ought to have a nursery under the management of the Office of Works in which to raise both trees and shrubs. It is, however, fair only to add that in this view I have the misfortune to differ from no less a personage than my distinguished friend Sir Joseph Hooker, the director of Kew Gardens. Sir Joseph considers that, while it is certainly cheaper for the nation to raise its own bedding and fine-foliated plants, it is better to buy trees and shrubs when they are cheap, and at sales in the country, because he considers that the demand for the latter is intermittent. It is exactly on this point that I venture to differ even from so eminent an authority." One of the many reasons which it seems to us should lead to the establishment of a public nursery would be the purchase of trees and shrubs of desirable kinds which it is impossible to get at ordinary sales. If the parks of London are to be planted in a fitting manner, the stores

from which they are supplied should be removed from the fluctuation and very narrow limits of the ordinary sales of common shrubs and trees. They ought, indeed, to be independent of the fashion of the day. There should be represented in them all the fine northern trees of the world, and, as we know too well, comparatively few of these are obtainable in most nurseries, many of them not obtainable at all. Thus, for example, there are various American trees which are never seen in a nursery, and when rare trees are seen elsewhere they are not obtainable. To a properly organised nursery for supply

of the parks of London people from all parts of the world would be happy to send seeds and young plants, and we should be able to get up a splendid collection of the hardy trees of the northern world, and these not as single specimens, but as healthy young stock for distribution amongst the various parks in positions most suitable for them. The very cheap common trees and shrubs might be obtained at sales, no doubt, but not the rare and good things. Our nurserymen would be very glad to contribute to or exchange with such an establishment, which could not fail to have a beneficial effect on the tree culture of this country.

Nursery Convention.—The fourth annual meeting of the American Association of Nurserymen, Florists, Seedsmen, and kindred interests is appointed to be held at Cleveland, Ohio, commencing Wednesday, June 18, and continuing three days. Among the objects sought by this association are the following: The exchange and sale of nursery products, implements, and labour-saving devices; the exhibition and introduction of new varieties of fruits, trees, plants, &c.; the cultivation of personal acquaintance of others engaged in the trade; to perfect better methods of culture, grading, packing, and sale of stock; to procure quicker transit, more reasonable rates, and avoiding needless exposure of nursery products when in transit; to obtain a reduction in rates of postage on seeds, scions, roots, and cuttings; to avoid the evils of dishonest tree agents; and to prevent the taxing of nursery stock when growing.



Idesia polycarpa var. *crispa* (one-third the natural size).

VEGETABLE CULTURE FOR MARKET.

SEAKALE.—This is extensively grown in the neighbourhood of London, and is considered a much more profitable crop than Asparagus. The demand for it is, however, not so great as that for Asparagus. There are few people who do not like Asparagus, green Peas, and new Potatoes, but there are a great many who do not like Seakale. Large quantities of it are, however, sold in Covent Garden between the beginning of December and the end of March. This is proved by the immense breadths of land devoted to its culture, and the long trenches in which it is forced to be seen in the Fulham Fields and elsewhere. Market gardeners grow Seakale on a different system from that usually practised in private gardens; indeed, if they were not to do so, the crop would be a far less profitable one than it is. Seakale is a crop easy to cultivate and free from disease and insect pests; it gives little trouble, and is highly remunerative. Growers in the Fulham Fields, the Chiswick and Barnes Thames level, the Deptford and Woolwich neighbourhoods, and, in fact, for many miles round the metropolis, pay much attention to it, and consider it one of their best vegetable crops.

Some growers raise Seakale plants from seed, but the majority propagate them from root-cuttings. It is, however, advisable once in every few years to raise plants from seed in order to infuse fresh vigour into the stock. For seed sowing, a piece of ground is selected in March and deeply dug or trenched; no manure is applied if the ground had been liberally treated in that respect for the previous crop; 4-ft. wide beds, with 1-ft. alleys between them, are then formed, and on these the seed is sown rather thickly and covered with soil from the alleys or by raking them in. The seedlings are left unthinned and unmoved during the succeeding summer and winter, no care being paid to them whatever beyond weeding. When the plants are twelve months old from the time of sowing, they are lifted, and all roots, except the main ones attached to the crown, are cut off. The main roots are also cut to 4 in. long. These are then planted permanently with a dibble in good soil. The objection to seedlings, however, is that they occupy the ground for one entire year without yielding any return, and also that during the second summer they are sometimes liable to produce a profusion of small crowns; and, unless these are reduced, the plants form but weakly subjects for forcing. The reason why the seedlings are not thinned and planted out the first season is because if so treated the majority of the plants "bolt" during the summer, and at lifting time the roots are weak, and therefore are both troublesome and unprofitable.

The best way, therefore, of increasing Seakale is from the trimmings or cuttings of the fleshy roots cut away from the plants when they are lifted for forcing. These thongs or roots, when removed, are thrown into a heap in a shed, there to remain until all the plantations that are to be lifted for forcing have been dug up and trimmed. The best of the trimmings are then selected, cut up into pieces about 4 in. long, and laid in a heap by themselves, and the remainder thrown away. In January beds are prepared for the cuttings, about 4 ft. in width, any length, and raised 6 in. higher than the surrounding level, to keep the Seakale roots healthy and free from damp. The cuttings are laid thickly on the surface of the bed and covered with soil. At planting time, which is in March, the beds are uncovered, when the roots will have formed several eyes, all of which are rubbed off, excepting the strongest top one. Some growers do not cut the roots until planting time, but lay them on the beds as selected from the shed. In March, when the beds are uncovered, they select the best eye, then cut the roots at the

required length below it, and rub off all other eyes, as in the previous case. The Seakale cuttings, being thus prepared for planting, are inserted with iron-shod dibbles into ground which was well manured and deeply dug or trenched in winter, levelled in February, and lines drawn along it 3 ft. apart and planted with Cauliflowers, keeping them at the same distance asunder in the rows. Between the lines of Cauliflowers, other lines are drawn precisely in the middle, and in them are planted white or green Paris Cos Lettuces 18 in. apart. In the rows occupied by the Cauliflowers, too, Lettuce plants are inserted alternately. A Seakale plant is now placed alternate with the Lettuces and Cauliflowers, but in the same lines. The Lettuces are first ready for market, and are removed before they injure the Cauliflowers. By the end of June all of the latter crop is also marketed, leaving the Seakale, which by this time will be coming up strongly, in sole possession of the soil. Some growers plant Seakale sets 15 in. by 18 in. apart amongst spring Cabbages, which are all removed before they can materially injure the Seakale. Others plant them between Asparagus ridges; but in this case they must all be lifted at the end of the first season, as is also the case when they are planted between fruit bushes and Moss Roses. Some market gardeners who grow roots for sale plant their sets at 18 in. apart each way, and never intercrop the ground amongst them, but take great care of them; and, under such management, they get finer roots than those produced among other crops. No care is necessary among Seakale plantations throughout the summer and autumn beyond frequently hoeing the surface soil, cutting away all flower-spikes, and rubbing off all small shoots that may chance to spring around the main one.

When forcing-time arrives, if the field is to be kept to yield what is termed "natural" Kale, *i.e.*, without being forced in any way, every third row of roots is lifted as required for forcing, and thus the rows are left in pairs with a space of 3 ft. between them. The surface of the soil is then raked clean, and from this wide space the rows are earthed over to the depth of 6 in. to prevent the frost penetrating the ground amongst the crowns and thus rendering it cold and late. The Kale begins to push about the second week in March, and, according to the position of the field and nature of the soil and weather, a supply may be gleaned therefrom till the end of April. As soon as the point of a shoot of Kale is discerned above the ridge the head is fit for cutting. For early forcing, the very best crowns, and such as the leaves die away from earliest, are selected and trimmed, so that 4 in. or 5 in. of the main stem, with the crown on the top, only remain. These are then placed closely together in an upright position in a hotbed prepared for starting them in, which, in the case of the earliest batch, consists of a manure-bed covered with frames and sashes, and a few inches deep of soil levelled within the frames for planting the roots amongst. A heat of 65° or 70° is kept up inside the frames, if possible, by applying hot linings of manure and by placing litter or mats on the surface over the glass, which latter also keeps all dark and blanches the Kale. Seakale growers try to have a good cutting on Lord Mayor's Day; but this is considered too early for regular forcing.

Forcing commences in earnest about the first fortnight in November, and large trenches or beds, on which Cucumbers were grown during the summer, are cleared out and re-filled with hot manure, over which 8 in. of soil is placed, and therein the Seakale is planted thickly in lines across the bed, which are about 5 in. apart, and about the same space of a margin is left empty on each side. Amongst the roots, and all round the beds, rows of stakes are inserted, 18 in. of their length being left above the soil.

Some 6 in. or 7 in. deep of short litter is then strewn over the whole surface of the beds, which are then covered over with mats supported on the ends of the stakes. Hoops and mats are often used instead of stakes. In about three or four weeks after the beds are made up, cutting begins, when it is necessary to uncover the beds as the operation proceeds, drawing the short litter off the crowns to get at them, and replacing it as speedily as possible, as all the crowns are not fit to cut at the same time. Beds for later crops are prepared on a well-sheltered plot of ground as near home and the manure-heap as possible. The ground is marked off into spaces either 4 ft. or 5 ft. wide, with alleys 2 ft. wide between them. These spaces are used as beds, over which the soil from the alleys is placed, after finely breaking it, until the alleys are 20 in. deep. The Seakale crowns are then all lined into these beds as described in the case of earlier beds, and thus the beds are left uncovered until they are required for forcing; but, as a rule, two or more of them are always being forced, and others started to succeed them. As these beds have no bottom-heat, it is not necessary that they must be immediately covered, as in that case they, being incited at the bottom, would grow, no matter whether their crowns are cared for or not; but, in this instance, having no exciting agent, and being in a dormant state, they await the cultivator's convenience. In forcing them, the alleys between the beds are firmly filled with fermenting manure, and, the beds being covered as formerly stated, with short litter and mats supported on the upright stakes, all is finished. The Kale takes a longer time to push into growth by this means than when forced on a manure-bed, and it does not come quite so regularly. This method, however, has the advantage of less trouble and risk, and great convenience in keeping up a supply until it can be produced from the open-air beds, after which the forced roots are removed to a heap by themselves, or to the piggery, where their vitality is sure to be destroyed. If conveyed to a field at once, with the manure which formed the beds, and dug in, they would grow again, and prove a future annoyance. The manure being forked out from between the alleys, the soil is levelled, and the piece of ground will then be ready for digging over for French Beans, Cauliflowers, or Tomatoes.

Both forced and natural Kale are cut three days a week, for which purpose is used a small tool with a handle about 1½ ft. long, bent at the neck, and with a blade about 2 in. wide by 3 in. long. This is a handy instrument, and well adapted for its purpose, as it can be so deftly employed for cutting the Kale with a small piece of the root-stock adhering to it. When the day's cutting is over, the Kale is washed, tied in bundles of a dozen heads, placed on its ends in punnets, and again packed into baskets, which are piled on waggons and sent to market. After all out-door Kale is cut, the ridges are levelled down, and the spaces between the rows cropped with white Cos Lettuces. Immediately the Seakale begins to grow numerous crowns are produced; but these are all reduced to two, or at most three, of the strongest, and in this respect, in removing their flower-spikes, and in keeping the soil about them loose and clean, they are well attended to afterwards. These old roots are the principal ones used for early forcing next year.

RHUBARB.—This is an important crop, and the quantities of it sold in spring are enormous. Waggon-loads of it are sometimes sold at very cheap rates, but at other times good prices have been obtained for it. Early Rhubarb is especially acceptable, coming in, as it does, when Apples have become scarce and dear. Rhubarb forcing in market gardens is very simple, and is done in hotbeds covered with hoops and mats. In making young plantations, the sets are sometimes planted about 18 in. apart each way; and, at forcing-time, every

other row, and the alternate plants in the row left, are lifted for forcing; old plantations, too, are cleared entirely for forcing. The leaves will be decayed enough to be raked off by the middle of October, by which time the first portion is usually lifted for forcing. For this purpose trenches are cast out, about 4 ft. wide and 2 ft. deep, and filled with fermenting manure. Over this a thin layer of common soil is placed, and in it the crowns, after being trimmed of some of their rougher roots, are planted. Over the crowns some loose litter is strewn, and then the beds are hooped over and covered with mats, over which another layer of straw or litter is placed during winter. In the outside covering, apertures are made at gathering time, and closed again when done. In February, if the weather be mild, the hoops and mats are commonly dispensed with. In some gardens excellent Rhubarb is produced in pits, with some heating material underneath, and some loose straw merely shaken loosely over the roots. Mr. Yeldham, of Hammersmith, forces Rhubarb in large quantities in his fruit houses; the roots are packed closely together on the floors, a little leaf-mould or other soil is cast over them, and they are afterwards covered with mats, which remain on them until the stalks are fit to gather. Rhubarb forced in this way is not so good in colour as that produced in darker places, and which we see in the markets early in the season; but it is greatly superior to it in flavour, and meets with a ready sale.

Whole fields in Surrey are devoted to Rhubarb culture, but the bulk of it from London market gardens is grown under fruit trees, positions in which it grows well. In spring, when the produce is most wanted, the trees are leafless, and therefore they do not shade it much, but afford slight protection, and the produce comes naturally fit for use about a week sooner than from the open field. The soil for growing Rhubarb is a deep, rich, and moderately moist one; exposed positions decidedly produce the finest Rhubarb, but under fruit trees this crop grows almost as well as anything else that could be planted; therefore, in order to economise this space, few crops probably pay better. The varieties grown consist chiefly of the Early Albert, Myatt's Linnaeus, Myatt's Victoria, Red Champagne, and Johnson's St. Martin. Red Champagne is much sought after in the market on account of its fine red stalks; and, when forced, its colour is brighter and more imposing than that of other sorts. In making permanent plantations, divisions of the old stools are used, and they are planted in rows 2½ ft. or 3 ft. apart, and from 2 ft. to 2½ ft. asunder in the rows. No leaves are cut away from them the first year, but the space between the lines is planted with Lettuces or Coleworts. During the second season many stalks are not cut, but in the third year a fair crop is realised. As soon as time can be spared in winter, and before the leaves begin to grow, the ground between the rows is dug over roughly, and a large forkful of rank litter placed over each crown. It would be difficult to take the litter into the plantation on a wheelbarrow, owing to the softness of the newly-dug soil; therefore the workmen carry it in baskets. As a rule, people are employed to fill vegetable baskets, others to carry them on their heads, and a few more to empty their contents over the crowns of the plants. Under the litter the stalks come up clean, tender, and crisp—very much more so than if none were used. The leaf-stalks are pulled for market as long as there is a demand for them; and even in late summer large waggon loads are often disposed of to jam manufacturers. In bunching the Rhubarb for market, a piece of board, padded with a piece of an old bag, is nailed to the bench in the packing shed, and into it four nails or pegs are driven, two withies being laid crossways for tying. The finest stalks are placed

New Dwarf Phloxes.—These bright little flowers are now very beautiful in Mr. Nelson's garden at Aldborough. Mr. Nelson has raised a considerable variety of colours from *Phlox subulata*. Any new varieties will of course be very welcome in the case of such a favourite plant, which we only know hitherto in the pink and the white form. It would be interesting to know if there are many varieties where the plant is common in America; if not, our American friends will have to come to us for these.

Saxifraga Wallacei.—In the note (p. 442) in reference to this plant we omitted to mention that it was a seedling, sent out about two years ago by Messrs. Dicksons & Co., of Edinburgh, to whom a first-class certificate was awarded for it by the Royal Caledonian Horticultural Society last year. The above name was given to it on the suggestion of the late Mr. James M'Nab, who as well as other competent authorities, considered it distinct from any other kind in cultivation.

Muscari armeniacum.—This is one of the handsomest of all the Grape Hyacinths, and the beauty of it is considerably enhanced by its flowering at a period when most of the other kinds are past. Its flower-stems grow 8 in. high, and are terminated by a dense raceme from 3 in. to 4 in. long, of bright dark-blue flowers, with small whitish teeth. The foliage is much the same as that of the ordinary *M. racemosum*. It is now in full beauty in Mr. Parker's nursery at Tooting.

Tabernaemontana Camassa.—A highly desirable stove shrub under this name is now in flower in Mr. Williams' nursery at Holloway. It has a neat compact habit, being 1½ ft. high, and has glossy Laurel-like leaves of a bright green tint. The flowers are in terminal clusters of about half-a-dozen; they are double, pure white, and much resemble those of a *Gardenia*, for which they might be advantageously substituted, their fragrance being similar; being to some extent freer both in growth and flower, this plant is indeed preferable to a *Gardenia*, and therefore deserves to be better known.

Cymbidium Parishii.—This rare and beautiful East Indian Orchid is now in flower in Mr. B. S. Williams' nursery at Holloway. In habit it closely resembles the superb *C. eburneum*, and its flowers are also about the same size, but differ materially in the colour of the lip, which in this is copiously spotted and mottled with a deep rose tint on a white ground, and also a tinge of lemon. The waxy, pure white consistence of the sepals is the same, and the delicious aromatic perfume exhaled by the blossoms is not less powerful than that emitted by its better known congener.

Trichocentrum tigrinum.—This exquisite little species is amongst the rarest of Brazilian cultivated Orchids. It is a stemless and bulbless epiphyte, with leaves very similar to those of *Oncidium Lanceanum* in form and markings, but considerably smaller. The flowers are large for the size of the plant, and have sepals of a yellowish ground colour beautifully barred with rich chocolate. The lip is unusually large and wedge-shaped, with the lower half pure white and the upper of a deep rosy hue, surmounted by a golden crest. The perfume is delicious and very powerful. It is now finely in flower in Mr. Williams' nursery at Holloway.

Astragalus adsurgens.—This is one of the brightest flowered of the numerous kinds of *Astragalus* grown at Kew. It is not more than 3 in. high, its leaves being composed of about a dozen pairs of leaflets, which are covered with a hoary substance. The flowers are produced in dense heads, 1½ in. across, and are of a deep purple-magenta. This, and the beautiful *Hedysarum humile* previously mentioned and still in flower, are amongst the most desirable of the dwarf Leguminous plants used for adorning the rock garden.

The "Times" on Mr. Marnock's Portrait.—The "Times" critic of the pictures of the year in the Royal Academy says of this: "'Robert Marnock, Landscape Gardener'" (1951), by T. Blake Wigram, is one of the most masterly and thoroughly truthful and vigorous portraits of the year, without any sacrifice of delicacy and finish to force. The picture will bear near as well as distant view. All the rest of Mr. Blake Wigram's portraits are eclipsed by his 'Robert Marnock.'

Elæocarpus dentatus.—One of the most interesting and beautiful plants now in flower at the Pine-apple Nursery is this greenhouse shrub. It is about 5 ft. high, and has small lance-shaped slightly toothed leaves, from the axils of which, and also from leafless nodes, are produced clusters of pretty white bell-shaped blossoms, beautifully fringed round the margins similar to those of the Alpine *Soldanella*, and highly attractive.

Saxifraga squarrosa.—This charming pigmy Alpine is the smallest of the Crustaceous section of Saxifrages which we have in cultivation. When not in flower it looks like a Lichen when not closely observed, but in flower the hoary mass is studded with small white blossoms, which have a very pretty appearance. It is now in flower in Messrs. E. G. Henderson's nursery, Pine-apple Place.

Ipochroma longiflora.—This rare and handsome Solanaceous shrub is now flowering in the temperate house at Kew, and is very desirable for greenhouse culture. Its blossoms, about half-a-dozen in number, are produced in terminal, drooping clusters; they are from 2 in. to 3 in. long, tubular, 1 in. across the mouth, and of a bright violet-purple colour. The leaves are ovate and pointed, and are covered with a downy substance on both surfaces. Like all the species, it is a native of South America.

Exochorda grandiflora.—This highly ornamental shrub has produced its large white blossoms abundantly during the past few weeks on the walls at Kew. It is a fine species, and one which cannot be too highly recommended for general culture. A good idea of its beauty may be gleaned from a coloured plate given in THE GARDEN (Vol. XI., p. 152).

NOTES ON HARDY PLANTS IN FLOWER.

Kew.—The collection here is now well worth a visit, though the late season has considerably retarded the flowering period of the majority of the plants. Amongst those of special interest may be mentioned the Black Sarana Lily (*Fritillaria kamschatcensis*), which, though far from being a novelty, is not often seen in flower, but which, from its peculiar aspect, is highly desirable. It grows about 9 in. high, and the leaves are arranged in whorls of four. The flowers, borne three or four in number, are over 1 in. across, cup-shaped, and almost black, the inside shining with a metallic lustre, relieved by a tuft of golden stamens. It is a native of Eastern Siberia, *Kamschatka*, &c. *Oursia coccinea*, represented by a fine example, is flowering freely, its bright scarlet blossoms being very attractive. Near it *Pentstemon Scouleri* is producing pretty lavender-tinted flowers. The hardiness of this plant has now been thoroughly tested, as it has withstood the past winter quite unprotected. *Reseda glauca*, though not at all showy, is an interesting species, the leaves of which are narrow and very glaucous. The finest of the Borage-worts in flower is *Symphytum bohemicum*, which is bearing a profusion of pretty cerise-coloured blossoms; *Polemonium humile* in an adjoining bed is also a neat-flowering kind, dwarfier and smaller in every part than the ordinary kind. The exquisite little *Trifolium uniflorum*, with its magenta and white blossoms, is an interesting object on the rockery. An exception to the generally brilliant-flowered Larkspurs is to be found in *Delphinium triste*, which is now producing a profusion of sombre-tinted blossoms. *Phlox bifida* and *pilosa* are desirable kinds, which make capital companions to their dwarf congeners *P. subulata* and its varieties, all of which are now in great beauty. The best of the Irises are *I. tectorum*, a Japanese species with large purple flowers beautifully mottled with lines of a darker hue, and surmounted by a whitish crest; *I. pallida* is a lovely kind, the flowers of which are largest of all the cultivated species, and of a delicate lavender tint; *I. Cingiatii* is a dwarf species resembling *I. pumila*, but has flowers of a deeper shade, with a light-coloured beard. Amongst bulbous plants, *Pancratium illyricum* is finely in flower; its blossoms are pure white, and their large size, number, and delightful perfume render this *Pancratium* a most desirable plant, and it is perfectly hardy. *Ornithogalum orthophyllum* and *latifolium* are very similar to each other as regards flowers; they have stems nearly 3 ft. high, terminated by a pyramid of pure white blossoms, each as large as a shilling, presenting a striking appearance. The old *Camassia esculenta*, with its dark-flowered variety (*atro-vioacea*), together with the newer *C. Leichtlini*, with its tall spikes of large greenish flowers, are very attractive. The various kinds of *Calochortus* and *Cyclobothra* are now beginning to flower, and *Cyclobothra elegans* is already flowering freely. *Clintonia borealis*, which can neither lay claim to novelty nor showiness, has flowered very freely, though now almost past. *Chrysoastron Hookeri*, a very showy New Zealand plant, delights in moist, peaty beds, where annually it produces a good supply of bright yellow blossoms in long racemes.

Tottenham.—Amongst hardy flowers now in bloom at Mr. Ware's the following are of unusual interest, viz., *Fritillaria recurva*, a beautiful Californian species, with rich orange and scarlet blossoms; the Ram's-head Lady's Slipper (*Cypripedium arietinum*), a singular looking kind, the flowers of which are greenish-yellow, with a small roundish lip of a pretty rosy tint. A very dark flowered form of *Camassia esculenta*, named *atro-vioacea*, is also very attractive and decidedly superior to the type. The white flowered form of the mealy Primrose (*Primula farinosa alba*) is another pretty acquisition, the small white flowers forming an admirable contrast to those of the original. The pretty Alpine Forget-me-not (*Myosotis alpestris*) is also very fine in this establishment, its sparkling azure-blue flowers quite enlivening their surroundings. Another charming mountain gem is *Armeria setacea*, a plant which forms dense cushion-like tufts of the deepest green, studded with many heads of pretty

pink flowers. *Saxifraga Wallacei* is here, as at other places, one of the finest ornaments of the rock garden; its large pure white blossoms, which are borne in great profusion, rendering it very effective. The pretty *Primula sikkimensis* has apparently withstood the past winter unscathed, and is bearing gracefully drooping canary-yellow blossoms plentifully. A capital plant to associate with it in damp borders is *Viola pedata*, one of the prettiest Violets we know of; a peat border at Mr. Ware's is literally covered with its delicate lavender-tinted blossoms. In the same border is a mass of a large-flowered variety of *Trillium grandiflorum*, a kind much superior to the ordinary form as well as being later in flowering. *T. erythrocarpum* is a charming species, which grows about 6 in. high, and has erect flowers $1\frac{1}{2}$ in. across, pure white, with a bright carmine centre colour. The Blue Daisy (*Bellis rotundifolia cœrulescens*) is finely in flower, though not of such a cerulean tint as its name would lead one to infer. The Alpine Windflower (*Anemone alpina*) is a very handsome plant, with elegantly cut foliage, forming a large rounded head, from which spring numerous pure white blossoms 2 in. across, and which have a very pretty effect.

Tooting.—In Mr. Parker's nursery the exquisite little *Campanula Allioni* is flowering in a frame. Its blossoms, which are large for the size of the plant, and borne quite erect, are of a violet-purple tint. In the same frame is *Dianthus neglectus*, quite a gem, with bright rose and white-mottled flowers, produced in abundance. A thriving batch of *Houstonia cœrulea*, with star-like, mauve-tinted flowers is also very showy. *Onosma taurica* is a desirable Borage-wort for growing on dry parts of the rockwork; it has clear yellow blossoms borne in drooping clusters. The white-flowered variety of *Dielytra spectabilis* is a desirable plant, but scarcely of so robust a constitution as the original. A bed of *Primula Munroi* forms quite a pleasing feature, its pure white clusters, when seen in masses, being very pretty. Amongst the showiest of the larger plants is *Verbascum phœniceum*, now bearing tall spikes of rich purple blossoms. The sulphur-flowered variety of *Anemone alpina* is also a striking plant, its feathery foliage and large pale yellow flowers contrasting well with each other. Some rockwork covered with *Atragene austriaca* in flower is very ornamental; its large purple blossoms are scarcely inferior to those of some of the hybrid Clematises. There is also a white-flowered form which is equally desirable.

Fulham.—Bulbous plants, such as the rich purple-flowered *Camassia esculenta* and its handsome congener *C. Leichtlini*, with its tall spikes of greenish-white blossoms, $1\frac{1}{2}$ in. across, are now very attractive at Messrs. Osborn's nursery. The various kinds of late-flowering Squills are also noteworthy, the white and the rose-coloured forms of the well-known *Scilla campanulata* being very ornamental; also the varieties of our native *S. nutans* with flowers of the same colours. The canary-yellow-flowered *Tulipa Celsiana* and the not very showy *T. viridiflora* are also now in flower in this nursery.

Effects of Local Influences on Garden Culture.—Mr. Quin will, I have no doubt, pardon me for again saying that I think the view which he takes respecting the cause of failure in the case of the plants in Mr. Tonks' greenhouse is incorrect, and not warranted by the circumstances as related. The fumes from alkali or other chemical works, such as those at Widnes, with the neighbourhood of which I am well acquainted, and where even Couch Grass for a short distance appears unable to live, are very different from those that arise from the ordinary manufactures carried on in either the Black Country or in the cotton districts, and I should have little hope of any one succeeding with plants, even under the protection afforded by a greenhouse, if near enough to the place from which the noxious gases proceed; but I do not think that at a distance of ten miles (which the Packwood plants are represented to be from the places whence Mr. Quin supposes the injury in this case comes) they would suffer perceptibly, much less be reduced to the condition in which these are said to be. In fact, I know some places where general collections of plants are successfully grown very much nearer Widnes than the distance which Mr. Quin names, and I do not think there is a place in this kingdom, or any other, where poisonous exhalations so destructive of vegetable life exist. It is impossible to grow plants without air more or less according to their kinds, and when the air is charged with impurities sufficient to injure or destroy vegetable life, the most skillful management would avail but little. The injurious effects upon plant life of poisonous gases from manufactures is a subject of great importance in this country, where works from which these arise are ever on the increase; much more is it so in the case of outdoor subjects than in that of those grown under glass; but I think in the case that has given rise to this discussion the cause must be sought for beyond atmospheric influences.—T. BAINES.

PLATE CLXXXIV.

THE MOCK ORANGES.

(PHILADELPHUS.)

THESE beautiful and usually perfectly hardy shrubs are commonly but erroneously known by growers of ornamental shrubs under the name of *Syringa*, a name which belongs to the Lilac. If an English name be preferred to that of *Philadelphus*, as it is by many, Mock Orange seems to be about the most appropriate, most of the representatives of the family having a perfume resembling that of Orange blossom, though of less overpowering intensity. Some of the kinds are, however, almost wholly devoid of fragrance, as, for instance, the beautiful and distinct Mexican form, which is also, alas, decidedly less hardy and robust in constitution than most of the other members of the family. The number of known varieties of these beautiful shrubs is comparatively very large, as many as fifty-five named kinds being in cultivation in the wonderfully rich collection of M. Alphonse Lavallée, at Segrez, near Paris, the accompanying plate being, I believe, drawn from specimens kindly furnished by that gentleman. Seedling hybrid varieties are also introduced and distributed from time to time by Continental growers, one of the best of which seems to be *Souvenir de Billard*, a very free blooming sort, even in a small state. The last new variety sent out this year by M. Lemoine, of Nancy, under the name of *P. multiflorus plenus*, seems, however, to be the freest blooming of them all, and well deserving its name, the small cutting-plant sent to me having three heads of bloom showing on it. There are also several other double-flowered varieties named *P. dianthiflorus*, *P. deutziflorus*, and *P. primulaeflorus*, the last said to be the most double and best of them all; but, though I have had a plant of it for three years, it has not yet bloomed, so it cannot, I think, be said to be a free flowerer. There are also two pretty varieties with ornamental foliage, one of them possessing light golden foliage, and the other having a distinct silver variegation.

W. E. G.

Children's Gardens.—Every young creature of the human race descended from Adam shows its garden origin by an instinctive love of stirring the soil in the season of vernal sunshine, and of planting in it seeds and shoots. It should be the business of those who are placed where they are responsible for the future common weal to see that all who are charged with the education of the youth of the nation shall take especial care to cultivate this tendency. Above every other temporal thing it has power to secure health, peace, and competence. A young man or woman who has learned to take interest in a garden and to grow plants well, is secure from the worst enemies of life; secure of procuring food and clothing by direct means, if indirect ones fail; secure of healthful and contenting employment for mind and body, and of innocent objects of attention and interest countless in number, and changing every day. Fortunate indeed is one whose early youth has been imbued with a liking for these pursuits and pleasures, and fortunate the society possessing such members. For they are not liable to fall into the unlawful courses which conduct the idle and the untrained into vice and crime, and make them the shame and the burden—and often the terror—of the industrious and the orderly. Our schools must find some way to teach the eager little ones the principles of plant growth. Much can be done in a city schoolroom with small pots of soil and seeds. In the country, where there are grounds fenced in, some sheltered part might easily be laid off and divided by narrow boards nailed on stakes driven down to keep them in place into a row of little lots, on each of which some easy-growing and productive plant may be set out to show what it will do when it has room, good soil, and sufficient support. On part of each lot the occupant for the season can try any of the experiments that children's whims suggest so freely. These will fail more or less, but their failure will be a lesson. The reason will appear; and the reason, too, why the Strawberry plant (grown in a pot for setting out), or the Radishes, or Tomato (trained up a stake), or Peas, or Potato, or Cucumber, or Rose have made such complete and profitable growth; these latter being protected and cultivated under the teacher's advice and care. Such instruction is given in thousands of schools in other countries. There is quite as urgent need of it here.—"New York Tribune."

***Primula cortusoides amœna* in Water.**—Is it generally known that this is a very lasting flower in water? I lately took with me to the Highlands a nosegay in which were some of these *Primulas*; all the trusses had flowers out, but some had buds. I put them into the tin on the 12th May, and in the water on the 13th, and on the 30th some flowers were still in full beauty. I enclose one dried on that day; the colour has changed in drying, but it will be seen that it has kept its full shape. I saw symptoms of the severe winter in good-sized Ash trees completely barked round by rabbits as high as they could reach.—G. F. WILSON.



GARDENING FOR THE WEEK.

Stove.

THE general stock of stove plants will now be in active growth; those that bloom during winter and spring, and that are afterwards cut back and treated in a way to induce them to make mature growth preparatory to a similar production of flowers when the season again comes round, must be encouraged, so as to get them up to the requisite size before the days begin to shorten, so far as to interfere with their shoots and leaves being well matured. Cut-back plants of most kinds, as their pots get full of roots, will be much benefited by the use of manure water, but the efficiency of this very much depends upon its being applied at the right time, that is, when the greatest development of both roots and branches is going on. The stove, and likewise intermediate house, will now require more air, both as regards the amount admitted and the length of time when the ventilators are open. The much less than usual amount of sun heat which we have had all through the spring, will, except in the best houses that admit the fullest complement of light, have produced foliage of a softer and weaker character than ordinary, and which will be much disposed to flag when extra air is given; but this will do no harm if the roots be sufficiently supplied with water, and the atmosphere of the house be not allowed to get too dry during the time when air is admitted. Close both stove and intermediate house early in the afternoons, accompanied by a free use of the syringe in the case of all plants that need it; any that have flagged through the daytime will thus quickly recover, but do not keep up too much atmospheric moisture at night.

Final Potting of Winter-flowering Stove Plants.—Such winter-blooming stove subjects as are raised from cuttings annually in spring will require shifting into their blooming pots before the roots become in any way cramped. The size of the plants and their condition will determine when this operation should be carried out, and on no account ought it to be delayed longer than necessary, as it is desirable to get them fully established with a plentiful supply of roots in the pots in which they are to flower before the season gets too far advanced, for when the growth of all stock of this description is made sufficiently early in the season to admit of a short maturing process before the weather gets too cool in autumn, by giving them more air and less shade than they need when in the full height of their growth, they will always bloom more profusely than when, to attain sufficient size, it is necessary to urge on their growth until late in the season. As to the size of pots required, that must be determined by the more or less vigorous nature of each plant; such, for instance, as the free-growing *Salvias*, *Eranthemum pulchellum*, and the strong *Begonias*, will want much more root-room than the spare-rooting *Euphorbia*, *jacquiniiflora* or *Poinsettias*, and similar plants. In all cases it is well to steer between the extremes of so confining the roots, as would be sure to result in the loss of the lower leaves, and of giving more root-space than is needed, as the latter, with anything of a coarse-growing character, has the effect of making them too large, and inducing a disposition to leaf and root extension rather than the production of bloom; and as all plants of this description can be very much assisted with liquid stimulants, when their pots get full of roots it will mostly be better not to use over-large pots, especially where the whole space available for accommodating such plants, both whilst growing and when in flower, is limited, as a larger number of moderate sized examples will be better calculated to give a succession than when a comparatively few larger specimens are prepared. Particular attention should be paid to stock of this kind through the next two months, in order to keep it near enough the glass of the pits and frames occupied, to prevent the shoots from becoming weak and long-jointed, for when this takes place, no amount of after care will ever induce the plants to flower so profusely as they ought. In order to still further effect this, whatever shading material it is found necessary to use should not be thicker than is requisite to shield the plants from injury; ordinary bast mats, which from want of a more suitable material are often made shift with, exclude too much light; the shading thus applied should never be on the glass longer than needful. Fixed shading in the shape of canvas tacked on the glass, or any of the various compositions used for smearing it with a view to save labour, are all more or less objectionable, for the simple reason, that for the few hours in the middle of the day during the brightest weather that it is necessary to temper the effects of the sun's rays, there is a much longer period during the morning and evening, when they minimise the light which the plants want in the fullest amount available.

Nepenthes.—The cultivation of these is now so much better understood than it was at one time, that no one need hesitate giving them who is in possession of a house, large or small, wherein is kept

up a temperature sufficient for the warmer section of stove plants; they may be grown as climbers either planted out or, still better, in pots, as more control can be kept over their roots, with a view of preserving them in a good healthy condition. They can be run round a pillar or up a rafter, but in the case of most of the best and finest species, after the growths have attained a few feet in height, they assume a condition known amongst plant cultivators as "run-out," that is, the pitchers assume a different shape, and generally become destitute of some of the parts which they possess before the shoots extend so far, and in this state are very much less interesting than they otherwise would be. For this reason they display their full development, and are usually most attractive when their growth is confined to pots of comparatively small size, so as to admit of the plants being suspended from the roof of the house, in which they are grown in a way so as to keep their heads near the glass. They must now be regularly shaded, as the sun at this season is much too powerful to be allowed to shine directly upon them; but the shading used should be thicker or lighter, according to the position in which they are placed; if in houses that stand with one side fully facing the sun at midday they will need it thicker than if in structures standing in the opposite direction. I allude particularly to this, as if the material employed excludes too much light, the plants are drawn up weakly, and the pitchers are devoid of the high colouring that so much enhances their beauty. They will now require a good soaking of water every day at the roots. I have found it best to give them this in the mornings, as when the soil has been recently moistened, it enables the plants to better withstand the drying influences of the midday sun, and air which it is necessary to admit to the house; at the time of closing, let them be freely syringed with tepid water, an operation to which it is necessary to attend regularly, otherwise thrips are very liable to establish themselves on the under sides of the leaves, where from their drooping position, unless care is taken that the water reaches them, they are enabled to remain secure; thus they very soon increase to an extent that proves permanently injurious to the leaves. There are few plants, if any, with which I am acquainted that need so little root room as *Nepenthes*; but when any have become evidently too large for the pots which they occupy, they should at once be moved into others 1 in. or 2 in. larger, according to the condition of the roots and the size of the specimens. In this operation neither the old soil nor even the crocks should be disturbed further than removing such as can be got away without interfering with the roots which are extremely brittle, and more impatient of injury than those of any other plants with which I have met. Let the material used, which should be similar to that recommended for the general winter potting before growth commenced, consist almost exclusively of vegetable fibre, intermixed with a very small portion of earthy matter; as the shoots extend each will require a stick to support it, but when inserting these in the pots be careful not to disturb the roots more than may be unavoidable.

Cephalotus follicularis.—This interesting little plant is sometimes assigned to the stove, and sometimes to the greenhouse department; the fact is, it may be cultivated in either, but the treatment which it should receive in these different temperatures requires to be considerably varied; as a matter of course, in the stove or intermediate house it grows much quicker than in the greenhouse; but, unless subjected to more light by being placed near the glass, the luxuriant growth made for a time will be so far deceptive that the plants will become exhausted, and ultimately dwindle away altogether. The best position I have found for them when grown with more or less heat is where there happens to be a shelf just beneath the lower end of the roof lights, where the bell-glasses necessary to cover the plants will be all but touching the roof; grown in heat in this way, the glasses should be tilted continuously during the growing season, more or less in accordance with the amount of air that is admitted to the house. This *Cephalotus* being really a swamp subject, should never be allowed to get dry at the root; and if the pots are well drained, and the material in which the plants are grown be of an open fibrous nature, there is little to fear from over-watering. It may be propagated freely by division of the small crowns, or side growths, usually produced from the main stem, which when they have got three or four leaves each generally form roots; if they are placed separately in the smallest pots, and filled with vegetable fibre from the best *Orchid* peat, added to an equal portion of chopped sphagnum, a little sand, and a few bits of charcoal or crocks broken fine—material in which they all grow freely. In the case of either large or small examples of this plant, the pots in which they are grown should be plunged in another pot sufficiently large to accommodate them, and filled with sphagnum, to admit of the covering bell-glasses standing within the rim of the pot. Where there is stock enough, a correspondingly more effective specimen may be made by plunging a number of pots containing individual plants in a large pan, or pot, covering the whole with a bell-glass.

Dionæa muscipula.—This plant, which is so suitable for associating with the *Cephalotus*, like it can either be grown in a cool house or in an intermediate temperature; but I have found it to be more influenced by light than almost any other plant. When grown in too dark a position the leaves produced become much attenuated, are less enduring and with correspondingly fewer roots, and not so vigorous in condition collectively; but, if too much elevated, so as to be over-near the roof, unless regularly shaded when the sun is on the glass, it generally dies altogether. I should recommend those who attempt its cultivation, or who have tried and failed, to place it in different positions in the house; when rightly placed, the trap-like appendages at the ends of the leaves will assume a beautiful reddish-bronzy colour, which may be taken as certain evidence that the situation suits it, and that it will not only continue to thrive, but increase so as in a few years to enable the cultivator to have considerable stock at command. Where it is at all strong, and throws up flower-stems through the spring or about the present time, as soon as these are apparent they should be at once removed, as the interest attached to them is not sufficient to compensate for the weakening tendency which they have on the plant. Keep the plants daily supplied with water, and from time to time see that they are free from green-fly, from the presence of which they suffer more than most plants. They sometimes succeed admirably in a house where there is a good deal of air given, with a bell-glass over them, tilted so as to admit air. They will grow in material such as that recommended for the *Cephalotus*.

Droseras.—There are now several forms of these singular plants quite distinct in habit from the ordinary British species; they grow to a height of 10 in. or 12 in., and have elegant subdivided leaves, profusely armed with glands, similar to those of the usual bog species. They thrive well grown in small pots in soil the same as that named above, the general treatment being also similar. They should have water in sufficient quantity to keep the soil continually wet, and a light position, in which the glands assume the beautiful red tint natural to them, and which so much enhances their appearance. As a rule, they succeed better a little more confined than the *Cephalotus*, that is, with the bell-glasses placed over them not so much tilted. —T. BAINES.

Flower Garden.

Auriculas.—It seems from remarks in last week's GARDEN that it is quite time that repotting was finished. I meant to say (p. 457) that ours were not yet potted, owing to want of time, although the largest proportion are finished. I have noticed in repotting that those potted in April and May last year have well filled the pots with roots, which are exceedingly healthy, and that those potted later, in July and August, are not nearly so satisfactory as regards the state of the compost or the health of the roots. It is evident that the Auricula does not make the largest quantity of roots between the last week in July and the end of the blooming time. Those who sowed seeds in July or August last year would do well to pay considerable attention to the plants at present, in order to get as much growth as possible, so that that they may be strong enough to flower next season; for if they do not flower, there will be the trouble of growing them for another year. See that they are kept clear of aphids by brushing them off or fumigating. We have occasionally dusted the plants with fine dry Tobacco powder, which will also destroy aphides to a limited extent. There has been no need to warn growers about injury from too much sunshine; but, should very hot, sunny weather set in after so much dull, cool weather, it will be desirable to shade when the sun shines directly upon the plants.

Carnations and Picotees.—In town gardens where green food is scarce, sparrows attack the flower-buds of these just as they are formed. This warning may be necessary, as the mischief is usually done early in the morning, even before five o'clock. The buds where injured look as if they were bruised by the fingers. White threads stretched over the plants sometimes keep them off, but a net placed over the beds is most effectual. It is desirable to remove the centre bud, when three side ones will push out strongly and flower about a week later. Those intending to exhibit will do well to take note whether they are likely to be late or early for a certain date, and disbud accordingly. The stems grow very rapidly, and it is necessary to frequently look over the plants, in order to furnish them with fresh ties, and to see that the stem is not injured by the old ones.

Dahlias.—These have not yet been planted out, but we hope to do so at once; the plants are quite ready, and no danger need be apprehended now from frosts. They have been kept longer in pots than usual, but we have not allowed the roots to become matted, which should always, if possible, be avoided. Our plan is to drive the centre permanent stick into the ground firmly, and then dig out

about two spadefuls of soil in front of it. We then fill this opening with good loam, enriched with about one-third part of rotten cow or stable manure, or, what is perhaps preferable, both sorts mixed. In this the plants are put out, pressing the soil firmly round their roots with the hands. Tie their tops to the sticks at once, in order to preserve them from injury. The present moist state of the ground and atmosphere is very favourable for slugs; therefore, see that they do not eat the leaves at night.

Pinks.—The earliest of these should now be in flower, but there is no sign of bloom at present; the plants are, however, healthy and the flower-stems strong, giving promise of a good display, even if late. The stems have just been tied to neat sticks of dried Osiers; the surface soil has also been stirred up, and the beds cleared of weeds.

Pansies.—These are now making a healthy growth, and the flowers are large and of fine quality, though the rains occasionally injure them. The plants delight in a moist atmosphere and plenty of moisture at the roots. Peg the stems out if the plants have not covered the beds.

Phloxes, Pentstemons, and Pyrethrums.—These are placed together, because the work required to be performed is very similar in each case. Old-established plants are apt to become overcrowded with flower-stems; these must, therefore, be thinned out before they injure each other. The stems must be tied to their sticks as they advance in growth.

Aquilegias.—These are now exceedingly beautiful. The light blues, *A. corulea* and *A. corulea hybrida*, are charmingly brought out when the plants are grown in pots and protected from rain under glass; they form at present quite a feature in our greenhouse. When in flower they require considerable supplies of weak manure-water; the leaves ought to be free from red spider and green fly before the flowers open.

Polyanthuses.—Old plants of these put out in the open ground from pots seem to revel in the dripping weather and moist atmosphere which we are now experiencing. See that the surface of the beds are lightly stirred and weeds removed. Seedlings come into flower much more rapidly than those of Auriculas. Seeds of them sown in March or April make strong-flowering plants by the end of the year. I sowed in pots about the first week in April; the seedlings were pricked out into boxes, and when the leaves meet together the plants will be put out about 6 in. apart, when they will flower the following spring. —J. DOUGLAS.

Indoor Fruit Department.

Vines.—Continue to attend to timely thinning out of both bunches and berries, stopping lateral growths, watering, &c. Growth now goes on so rapidly that a single day's procrastination in the execution of any of these operations cannot take place without injurious consequences; an effort should, therefore, be made to perform every operation at the right time. It is curious to note how, under entirely opposite conditions, the same end is sometimes attained—a case in point being our large house of Lady Downes; this, for the past two seasons, did not set its fruit so well as was desired, some few of the best bunches having to be cut off, and yet every pains was taken to disperse the pollen, and the weather was all that could be desired, and now this season, though there has not been a single hour's sunshine during the time when they were in flower, and no attempt at artificial fertilisation made, other than a shake of the trellis, every bunch is so thickly set that it is with difficulty they can be thinned. Such a circumstance is calculated to set one thinking, and the only solution I can at present give is, that the Grapes were cut and bottled a month earlier than usual, hence the Vines have had a longer rest, and are consequently better able to stand a strain at this early stage of growth than they otherwise would have been; should my surmise be confirmed by another season's experience, I shall look upon early harvesting of the ripe fruit as an important item in the cultivation of this best of all late Grapes, for surely it deserves this designation, seeing that we have bunches now (June 7) with berries as plump and carrying as fine a bloom as when they were cut at Christmas, and in flavour at least equal to newly-ripened Hamburgs.

Peaches and Nectarines.—As these will not keep long after being fully ripe, in order to lengthen out the succession let the houses be freely ventilated night and day, in order that full-maturity may be developed as gradually as possible; the flavour will also be better in consequence. As soon as all the fruit is gathered the trees may receive the same treatment as they did in the earlier stages of growth, and the shoots intended for next year's fruiting should have full exposure to sunshine by the removal of all others that are not required for furnishing the tree. The border, too, must be as well attended to as it was before the fruit was gathered; indeed, at no time should it be allowed to get dry, or even dryish, as is sometimes

recommended, under the delusion that it aids the ripening of the wood. Thin the fruit in succession in late houses, and regularly stop all lateral growths, but particularly when the fruit is in its last stage as regards swelling; well ply the syringe till it begins to change colour, and this will keep down red spider. For green fly nothing is so effectual as fumigation, and for mildew plenty of root moisture and sulphur dusted over the affected parts. Fire-heat ought not now to be necessary, but growth should be pushed on by closing the ventilators early, and so making the most of sun-heat.

Pines.—Usually at this season there is a redundancy of ripe fruits which it is desirable to keep in good condition for as long a time as possible, and one of the best ways of retarding them is just before they are fully ripe to transfer the plants to a cool, airy house, and shade them from sunshine. A well ventilated fruit-room, if not too damp, is an excellent place for them. Where room cannot be had for the plants, if the fruit be cut and suspended in a cool, airy position, it will keep a considerable time in that way, but the former plan is preferable. If there be any fruits required by a certain day, and it is thought doubtful as to their being ripe at the time, a push can be made by keeping a closer and moister atmosphere than is generally desirable when the fruit is ripening, but it must be remembered that such extra forcing will to some extent be a loss as regards high finish and flavour, and therefore such extra forcing should never be put in practice, except under the most unexceptionable circumstances. All varieties of Pines attain the highest perfection of finish and flavour if, as soon as they begin to colour, they have what may be termed greenhouse treatment, and are allowed from this stage to ripen as slowly as possible. It is usual to withhold water when this stage has been reached, but having broken through this rule by keeping them moderately moist to the very last, the results are so largely in its favour that now we always water moderately. The autumn and winter fruiting varieties now showing fruit should have the most liberal treatment. A bottom heat, ranging from 85° to 90°, must be maintained, and the plants must be well supplied with water; they should be examined twice a week with reference to this matter, and guano water or other liquid manure should be used at every alternate watering. Until they are in flower the air-moisture cannot well be too excessive, but at that time a drier but not arid state is necessary till they are out of flower, when moisture may be again increased. Seeing that there has as yet been only a few fitful gleams of sunshine, and the tissues of the plants are too tender to withstand bright weather, partial shade may still be requisite, more particularly in the case of the rich Cayennes and recently potted plants. The strongest suckers from the earliest ripened Queens may now be potted, and if grown on freely from the first, they will make the finest summer and early autumn fruiters next year.

Strawberries.—From the experience of the present season, it seems to me that these will attain perfection without sunshine, for one hears on all sides how good they have been, not only to look at, but to eat. I interpret the matter thus: the weather has been continuously dull and cloudy, so comparatively little water has been required, increased fire-heat has been neutralised by increased atmospheric moisture, and so a moist heat has been engendered (the entirely opposite of that afforded by sun-heat), and this, combined by free ventilation, which all know Strawberries must have, has ended in the production of as finely-flavoured fruit as could have been expected in the most favourable season. That old and long-continued favourite forcing kind, Keen's Seedling, cannot be excelled in quality, but, having gained some notoriety for its knack of non-setting and blindness, its popularity is on the wane. Sir Charles Napier, however, well ripened, is too acid for many palates, and so also is Sir Joseph Paxton, whilst British Queen is too shy a bearer, at least under ordinary conditions, so that the varieties President and Vicomtesse Héricart de Thury, with me at all events, must have first places. These are still producing as fine fruit as anyone could desire, and all the cultural aids now requisite are a full supply of clear manure-water and the removal of redundant fruit.

Figs.—As soon as the first crop has been gathered, thoroughly cleanse the trees, walls, and glass by means of a free use of the garden engine, and, if necessary, apply a fresh top-dressing to the border; in any case there should be a renewal of the mulching, and the inside borders should be well soaked with warm water. All surplus second-crop fruit should be at once removed, and the trees should be syringed early in the morning and at shutting-up time. Very little fire-heat will now be necessary, all the forcing requisite being obtainable by early closing on sunny days. The same remarks are equally applicable to trees growing in pots, except that those bearing ripe or ripening fruit must be kept drier both at root and top.

Melons.—As we never attempt the growth of these in any other way than in houses heated by hot water, the notes under this head are only applicable to the growth of Melons treated in that manner.

The earliest fruit will now be cut, and if the plants have retained their foliage good to the last, they may again be left to produce another crop. In order to encourage this, let the bed be thoroughly saturated with warm water, and immediately mulched with 3 in. or 4 in. of droppings. Shorten back the laterals to within two or three joints of the main stem. Syringe regularly, and otherwise treat as recommended in the case of young plants, and a crop of fruit will be had much earlier than from young plants. Of course if the plants have been damaged by spider or otherwise it is best to discard them; cleanse the house, renew the border, and replant with young plants. Support swelling fruit with pieces of netting before there is any danger of their weight breaking down the Vines, and take every pains to keep the foliage clean to the last, tying any aside that overshadow or prevents the sun from reaching the fruit. Succession plants should be examined for the purpose of fertilisation when the maximum daily temperature has been reached, and if three, or at most four, on each plant can be fertilised at the same time, it will conduce to more even and certain swelling off. Stop the laterals to reasonable extent only; so long as there is room without overcrowding, the more foliage there is the better. In case the old plants get injured, and are not equal to the production of a second crop, another sowing may now be made.

Kitchen Garden.

If, as is generally believed, a long and severe winter kills slugs, how is it that they are now as numerous as ever? At this place they certainly are, if anything, more numerous, or at least more troublesome, than in any previous season; and to save such seedlings as Beet, Cauliflower, and Lettuce, we have had to apply repeated doses of lime and soot, and also to trap them with Cabbage and Lettuce leaves and small patches of bran. This latter bait must have the palm for effectiveness. It appears to be a dainty morsel to them, for so long as a bit remains nothing else is touched. Peas are, I suppose owing to the wet, growing abnormally tall; we have, therefore, topped them, hoping to prevent the injury that might befall them through their getting too tall for the stakes. Doubtless in good ground all kinds will this year grow taller than usual, and topping may be done with advantage. Late kinds may still be sown, except in cold, bleak localities, and there early sorts should be put in. William the First is about the best of all the early kinds, being within a day or two as early as Ringleader, and equal in quality to Champion of England. French Beans have grown very badly this season, and those who took the precaution to sow in boxes, with a view of transplanting, have acted wisely. Now, however, they must germinate out-of-doors, and should be sown in quantity for autumn use—2 ft. apart from row to row, and 9 in. asunder in the row. The taller-growing kinds, such as Canadian Wonder, ought to be supported with Birch twigs; double produce may then be had, for this variety grows so tall, and bears so profusely, that the haulm is weighted down, and much of the produce gets spoiled if the plants are not thus supported. Lose no time in finishing the thinning out of seedlings of Parsnips, Carrots, Onions, and Beet; the last of these transplants fairly well, but care must be taken to keep the points from doubling up in the process, or forked roots may be the result. Fill up every spare bit of ground with winter greens, Coleworts, and Cauliflowers. Prick out Broccoli ere they get spindly by being left too long in the seed-bed. A few of an early kind, such as Veitch's Self-protecting or Snow's, should be permanently planted to succeed the autumn Cauliflower. Celery, too, must now be got out. We always plant in double lines, in trenches 30 in. wide and 9 in. plant from plant, using the best manure at command. If the weather be dry when first planted, a good watering is given, and once weekly in dry weather to keep the plants growing; for, if once drought checks growth, they are sure to run to seed. Free, unchecked growth never fails to produce solidity, which enables Celery to withstand any reasonable amount of frost without protection. Sow Lettuces and Endive thinly where they are to stand, and thin out those previously sown to 9 in. or 12 in. apart, and prevent slugs from attacking them by the means just named. Sow Radishes, Mustard, and Cress in any spare corner every week or ten days. If Herb seedlings and the Herbery generally have not yet received the attention recommended (p. 395), it should be given now, or several kinds may be wanting when required by-and-by. We have generally made it a rule to discontinue cutting Asparagus as soon as Peas are plentiful; but, as a full supply of these will not be had this year till quite the end of the month, or perhaps July, it is evident that that rule cannot be adhered to this season, more especially as the demands on it have already been greater than usual, through the winter destroying other vegetables. All who can afford it will, therefore, act wisely to discontinue cutting forthwith. Scrupulously guard the stems of any that has been recently planted from injury. The plan of sowing Lettuces, Radishes, &c., between the rows cannot be too severely condemned.—W. V.

THE INDOOR GARDEN.

CULTURE AND PROPAGATION OF SOFT-WOODED HEATHS.

CAPE Heath is rarely found in good condition in small gardens, many not even attempting their culture from the mistaken impression that it presents difficulties which a small grower with but limited glass accommodation cannot surmount. So far is this from being the case, that any one who possesses a greenhouse and a cold frame, or even only the latter for convenience, may grow these interesting plants, as well as those who enjoy the convenience of an extensive range of glass. The free-growing varieties of the Cape Heath should indeed be regarded as especially suitable for amateurs, inasmuch as they may be grown during a portion of the summer in the full sun, not needing the slightest protection from its rays, and in winter they will be content with the accommodation of an ordinary frame, and will bear, without manifesting any signs of distress, a considerable amount of frost. I have known one of the largest collections of Heaths in this country to be repeatedly frozen, the soil in the pots being so hard that a pointed stick could not be thrust in it. I would not, of course, advise this treatment; I merely mention the circumstance as tending to prove that Ericas are not of such a tender nature as many suppose them to be. Neither does their general culture present any formidable difficulties, as any one who can grow an Azalea may succeed in cultivating any of the soft-wooded section of Cape Heaths. Many causes of failure in the culture of this tribe of plants may be attributed to undue confinement, both in summer and winter. Abundance of light and air is indispensable to their well-being. I need scarcely urge the decorative value of the Heath tribe, most plant lovers being well aware that it exhibits considerable variety of form and colour, and that many varieties have the merit of flowering at a season when bloom generally is scarce.

Soil and Potting.

With respect to soil, the beginner can scarcely make any mistake, as the only suitable compost is fibrous peat. Every care should be taken to secure some of the very best quality, as although Heaths will live and even grow a little in poor peat, they never attain a vigorous development, but linger on in a miserable way, utterly failing to develop the floriferous tendency which characterises this family of plants. Sour peat produces even more disastrous results; the rootlets, which are of a minute, hair-like description, absolutely refuse to mingle with it, and a healthy plant shifted into peat of this description will generally turn yellow, make scarcely any growth, and when turned out the old ball will come away from the new soil in much the same state as when potted. I have felt it necessary to dwell somewhat at length upon this matter, as so many failures occur from this cause alone, and I know from experience that few families of plants are so particular with respect to soil as are the Cape Heaths. Give them a good, generous, suitable compost, and any one may grow them to perfection; pot them, on the contrary, in soil which does not fulfil these conditions, and failure and disappointment will assuredly follow. In preparing the soil for use many of the best growers prefer breaking it up by hammer to chopping it; it should be broken into pieces about the size of a nut, and about one-sixth of silver sand should be added to and intimately mixed with it. If very dry it should be moistened before being used, which is best effected in the following manner: Spread a thin layer of soil upon the potting bench and sprinkle it; follow up with another layer of soil, which must also be moistened, and continue this until the entire heap of compost is worked through. Allow it to lie until the following day, when it will be found that every particle of mould is moistened through, thus bringing it to just the right state of moisture for potting. When used in a dry state, heavy waterings are rendered indispensable, in order to thoroughly moisten it, and it often occurs that a considerable amount of injury is thus inflicted upon the young fibre. If the base of the plant to be shifted is in a moist condition, and the compost employed is also moist, immediate waterings are obviated, and the roots will have commenced to penetrate the fleshy soil before much water is needed. Good free drainage is of great importance. For 4-in. and 6-in. pots a piece of crock large enough to nearly cover the bottom of the pot should be employed. Upon this place a layer of fine crocks from which the dust has been sifted; finish off with some of the most fibrous portions of the compost. When about to repot make sure that the base of each plant is thoroughly moist. The best way is to look through them the night before potting, well watering those that appear at all dry. Do not attempt to remove any of the old soil, as such a practice is sure to entail the destruction of many of the best feeders, and be careful in extracting the old drainage not to bruise or break off the roots, which are almost always to be found amongst it. The fresh soil should be pressed in firmly,

and the surface should also be made firm, which has the effect of causing the water to percolate gradually through and thoroughly soak every particle of soil in the pot. A small lath is often employed for ramming the soil down; but I should warn the inexperienced against making a too free use of this implement. I have known the soil to be pressed in so tightly as to render it almost impenetrable to the roots. In this matter there is a happy medium, which if attained will ensure success.

General Treatment and Varieties.

We will now suppose that the plants have been potted in the manner recommended, and have been placed in a cold frame upon a well-ashed bottom. They will need a little air on fine days, and may be slightly syringed in the afternoon, watering when needful, but not heavily. As they begin to grow both air and water will have to be more liberally supplied, gradually increasing the ventilation until the sashes can be entirely removed both day and night. Heaths enjoy a maximum of sun and air, and they do not flower freely unless they get it. Market growers and nurserymen generally arrange their plants during the summer months in long beds, allowing plenty of space between each plant, and the success which attends this treatment fully testifies to its value. A sturdy, close habit is thereby induced, the foliage takes on a healthy green colour, and the flowers are produced in profusion. In hot weather copious supplies of water must be given. The most strict attention in this respect is needful, as if once a plant droops from want of moisture, it never appears to grow with any degree of vigour afterwards. In the hot days of July and August, when the pots have become full of roots and a large amount of foliage is developed, evaporation in the full sun goes on so rapidly, that some of the plants are almost sure to suffer unless they are looked through twice during the day. The rule should be to water them that need it in the morning, somewhere before midday, and then towards evening give them all a thorough soaking. In very parching weather a good moistening overhead will also prove beneficial. Should the season prove damp, mildew will often make its appearance, and if unchecked will completely paralyse the energies of the plants. It is, however, easily destroyed if taken in time in the following manner: Enclose flour of sulphur in a fine muslin bag, invert the plants, and dust the whole of the under side of the foliage. Wherever there is mildew the sulphur will adhere, and will, in about a fortnight, quite dry it up. By the end of September the plants should be placed in their winter quarters. If there is a scarcity of room in the glasshouses they may be successfully wintered in a cold frame. In some large trade establishments many thousands are thus wintered, and although in a severe season the frost may penetrate to and freeze them a little, they do not appear to be the worse for it. I would of the two prefer to have them rooted to placing them in a house where they would not be sure to enjoy the amount of air which is so necessary to them. The treatment which, in this respect, the ordinary run of bedding plants receive during the winter will also suit the Heath family. Plenty of air without cold draughts should be the rule. Plants in 4-in. and 6-in. pots are very suitable for room decoration, but those who wish to preserve them in health and grow them in for another year should not keep them more than a week at a time in the dwelling, neither should they be placed in an apartment where a fire is constantly maintained or gas burnt. They may be employed to decorate those apartments which are kept comparatively cool and airy, and if taken out and well sprinkled, and allowed to remain for a few days to recruit their strength, they will not suffer, and may be again employed in the same manner. As soon as each plant is done blooming, let it be cut down below the flower-spike, and be placed in a cold frame in readiness for shifting. Although the generality of soft-wooded Heaths are found to be most useful for general decorative purposes when grown in small pots, yet larger specimens will be found very effective. In large conservatories, for instance, well-grown plants in 8-in. and 10-in. pots are useful, and, owing to the pleasing neutral tints which many of them display, they associate well with and help to subdue the glare which is often rather too pronounced when a quantity of very bright-flowering plants are brought together. The following are a few of the best varieties, all or any one of which are suitable for beginners, and afford a succession of bloom during the winter and spring months: *hyemalis* and *gracilis* autumnalis, the two best winter-flowering kinds; *gracilis* vernalis, similar to the last-mentioned kind, but flowering in early spring; *Willmoreana*, a strong grower and very effective; *Sindryana*; *caffra* nana, a dwarf-habited, free, white-flowered kind, of an enduring nature; *propendens* tubiflora, a very pretty variety; *candidissima*, pure white; *colorans*, and *Bergiana*, the latter an extremely fine-flowering pink-coloured kind, admirably adapted for growing into a large specimen; *persoluta* alba and *rubra*, easily grown kinds, very useful for cutting. The above are some of the most useful varieties. There are many more good kinds, but those enumerated will suffice to keep up a succession of bloom during the duldest part of the year.

Propagation.

In trade establishments where the culture of Heaths is made a speciality, the method of propagating is as follows: Early in the year healthy plants of the kinds it is desired to propagate are introduced into gentle warmth; in due time they produce a quantity of soft shoots. These are taken off, and the lower portion of each cutting is trimmed up with a small pair of scissors, the greatest precaution being taken to preserve them from the drying influence of the air. Six-inch pots, which have been filled to about one-third of their depth with drainage, are filled up to within 2 in. of the rim with fine fibrous peat, which is surfaced with silver sand. The sand must come up to the rim of the pot, and should be shaken down firmly, so that when moistened it does not sink any lower. When filled, place the pot in a tub of water, so that the whole body of soil may become thoroughly moistened, when they should be allowed to stand and drain several hours before using them. Then take a

fest, a little air should be given for a few hours each day, tilting the bell-glass slightly on one side, and increasing the ventilation as growth progresses until the glasses may be altogether removed. The hardening off must, however, be very gradually conducted; undue haste will cause a very serious check, and will often entail the loss of the little plants. When fairly hardened off they may be potted in 2½-in. pots and kept in a warm house until well established, when they may be removed to a cold frame. During that season and the following they will need to be kept pinched back, so as to induce a bushy dwarf habit, and promote the formation of a mass of feathery foliage near the pot. Unless a Heath is well furnished with healthy foliage down to the soil, it can scarcely be said to possess any true decorative value. On the Continent a different method of propagating is practised from that above described. There cuttings are inserted in the month of August, and inserted much in the same manner as in this country, but they are placed in a cold



Chysis Chelsoni; a new Hybrid Orchid, between *C. bracteescens* and *C. aurea*.

bell-glass and imprint its outline upon the sand, thus exactly indicating the area to be filled with cuttings. If straight lines are then drawn from one side of the circle to the other, the cuttings may be neatly and expeditiously inserted. As each pot is finished it is covered with a bell-glass, and a gentle watering given over the glass. It is, indeed, only in this manner that future moistenings can be administered, as sprinkling in the ordinary way generates mould, which is so deadly in its operation, that two or three days only suffice to sweep off a potful of cuttings. The pots should be plunged up to the rim in a tan bed, and strict attention must be paid to shading them, as half-an-hour's exposure would suffice to destroy the most promising of cuttings. Every morning the glasses should be taken off and the insides wiped quite dry, at the same time giving a glance at the state of the cuttings. Should there be any signs of damping, remove at once the decayed portion before it has time to infect the remainder. As soon as any signs of growth are mani-

frame until housing time, when they are transferred to a warm house. During the winter they take root, and are potted off in the spring. Both systems have their advantages; by the former a great number of cuttings are obtainable from a single plant, as, by keeping it in a warm house, fresh shoots are continually forming to replace those taken off; therefore, so many plants are not required to furnish cuttings, and a stock may be quickly worked up. J. C. B.

Chysis Chelsoni.—The annexed woodcut represents a fine hybrid raised at Messrs. Veitch & Sons' establishment at Chelsea, and, on account of its distinct character, a decided acquisition to the small genus to which it belongs. It is the result of a cross between *C. bracteescens* and *C. aurea*, and partakes of the character of both parents. The colour of the flowers is nankeen yellow, with a large rosy blotch on the tips of the sepals; the lip, which is bright yellow,

is pencilled and spotted with purplish-red. As evidence of its superior merit it has received first-class certificates from the Royal Horticultural and Royal Botanic Societies.

SHADING CAMELLIAS.

The ability of Camellias to stand exposure to the sun depends upon circumstances, and, meanwhile, I would recommend "Enquirer" (p. 466) to be cautious as regards exposing his plants that have been grown in a glasshouse and partially shaded, though he may, without hesitation, place them out-of-doors behind a high north wall or hedge where they will be protected from the fiercest rays of the sun. The plants should, however, have completed their growth before being put out and showing their rudimentary flower-buds. July is usually soon enough to place Camellias out-of-doors, and they may remain out two or three months. The practice is, however, only advisable when the Camellia house is wanted for other purposes during summer, for there can be no doubt of the advantages of keeping them indoors all the year round when practicable. As to exposing Camellias to the "full blaze of the sun" under glass, that is a point on which "Cambrian" differs from most other cultivators. My own experience is that in our fitful climate it is not safe to dispense with a slight shading after April. After a period of dull weather particularly I find that the foliage is almost sure to suffer from bright sunshine, notwithstanding abundant ventilation day and night, and the vigorous health of the plants. The scorching, or whatever it may be called, is due sometimes, I fear, to lenses in the glass, as I have not unfrequently seen a bush struck right across in a straight line, and the same thing happen at the same place at different times, but as a rule blistering occurs indiscriminately when the plants are exposed to bright sunshine through a glass roof; and this appears to be the experience of most cultivators. Nurserymen and owners of some of the finest collections of Camellias round London and elsewhere, shade their houses, and also recommend the practice. One of the finest houses of plants with which I am acquainted, whether as regards size and health, or the abundance and quality of the blooms which they produce, are permanently shaded by scrim canvas throughout the summer. Another private collection which includes some of the oldest Camellias in England, all in robust health, has been shaded every summer for many years back by having the roof painted green. Many of the plants are trees in size, and have never been out of the house. Upon the whole, I think the best advice that could be given on the subject is to shade slightly from bright sunshine. It is certain, at least, that shading will do no harm, and it may very probably prevent serious injury. That the Camellia when grown out-of-doors will stand the most intense sun-light there can, however, be no doubt. Plants growing in shrubberies in the full blaze of the sun are common enough, and for my part I never saw one injured. An old bush here has been growing against a south wall, where it is exposed to the sun all day, and yet it is as green and healthy as can be. In the dry summer of 1868, and in more recent years, when the outdoor thermometer in the shade registered 85° and 90°, this bush did not suffer in any way, but retained its foliage fresh and green; yet it must often, and for long periods at a time, have been exposed to a sun temperature of 130° or more against a brick wall. The fact, however, that Camellias will endure such exposure out-of-doors does not affect the question of shading them when grown under glass. There are not a few subjects besides the Camellia that will stand strong sunshine and a high temperature in the open air that would become blistered or scorched under a glass roof.—J. S. W.

The query put by "Enquirer" as to the most suitable position in which to place Camellias in the open air is one that will doubtless be answered diversely, just as the Camellias under notice have been grown in shade or sunshine. As a rule, in house culture there can be little doubt that shading more or less is employed, especially if the plants be near the glass. If Vines or climbers partly cover the roof, then generally more than enough shading is provided. The chief danger to the foliage when exposed to the full glare of the sun under glass is blister, but this is no doubt produced by excessive concentration of the sun's rays upon a given spot through some defect in the glass. Therefore, it is not certain that the same mischief would follow in the case of plants in the open air, as there the sun's rays are equally distributed; the heat is never so great, and the sun does not possess scorching power until the foliage is hard and the wood partly ripened. Camellias planted in the open ground are fully exposed to the sun with impunity at all seasons, but the foliage does not suffer. From this fact it is but fair to infer that the more the foliage is exposed to light and air under glass the less danger is there of its becoming scorched. Probably the chief danger to Camellias in pots likely to arise from full exposure to the sun would be the extreme hardening and drying of the balls of earth

that might follow. This could be obviated by the use of some plunging material, but I think in placing them somewhat in the shade in the open air growers will prove as thoughtful of the roots as of the foliage.—A. D.

In old dark houses, the roofs of which are constructed of almost half wood, with small panes of glass and their innumerable dirt-holding laps, Camellias can doubtless be grown without shading and without their leaves being burnt or discoloured, but not in houses of modern construction, built, as they ought to be, in a way capable of affording the most light to the plants they contain, which may be Camellias one season and plants of a wholly different character another—not but that Camellias are very much better for being grown in a structure that affords plenty of light, but the admission of light and allowing the leaves to be injured by full exposure to the sun's rays are very different. And in how many houses of fair construction can Camellias be put to make their growth without their leaves being absolutely burnt, unless shading of some sort be applied? The position of a house has a good deal to do with the sun affecting the plants within it. I have had to deal with Camellias in a good many houses, varied in character and standing in various positions, lean-to's and hip-roofs facing south, as well as span-roofed with the ends east and west, and in the opposite way, and also a good many of my own planning, in which I have used all care in selecting the best British glass, but not even in a roomy span-roofed structure, with its ends north and south—in which direction, as is obvious, the sun's rays reach the plants in an oblique direction, still further protected at mid-day, when most powerful, by the bars and also rafters, where the latter were employed—have I ever yet been able to dispense with shade of some sort without the leaves suffering to some extent; neither have I ever seen these plants with others in a good modern-built house do without shade at the time when they were making their growth in the spring and summer months. As to turning them out-of-doors fully exposed to the sun, much depends upon the time when they are so turned out; if towards the end of summer, little injury may follow, and their susceptibility to be affected by the sun will be influenced by the way in which they have been treated whilst their growth was being made, and also by their being gradually brought from a shady position into a sunny one; but I have frequently seen those who have thus exposed their plants regret it; many of the leaves, although not burnt as when under glass, became reddish-grey, a colour which they often assume when so treated, and which is not only unsightly, but does serious mischief by shortening their duration. May I therefore ask what is gained by attempting to either grow Camellias unshaded, or by exposing them to the sun out-of-doors after their growth is completed, especially the latter? For my own part, in the case of such as are in pots or tubs, I much prefer, when their growth is finished, putting them in a lean-to north house where available. If this be not at hand, I set them under a few lights improvised to cover their heads on the north side of a wall or building, and where these are not obtainable I employ a piece of tightly-stretched thin canvas or white calico, sloping so as to throw off the rain, which, saturating the ball, frequently causes the buds to fall. In such a position there is also much less danger of the soil unobserved getting too dry, which is another cause of the buds dropping, although in both cases the effects of the injury may not be apparent until months afterwards, and the cause then forgotten. Such makeshifts as the above cost little in material or labour, and will preserve the plants from injury. But even dispensing with them, I can scarcely imagine a place where there is not a wall, building, or a few trees, on the north side of which Camellias can be set where they will be shielded from the sun during the middle of the day. In bushy dense growth, healthy condition in every way, size and profusion of flowers, there are thousands of examples to be seen throughout the country that I think afford sufficient evidence that the system of management with shade during the summer months of the year, hitherto admitted to be the right treatment for Camellias, is not likely to be surpassed by full exposure to the sun. Even when the leaves were not actually injured, I never saw Camellias fully exposed out-of-doors that had not more or less yellow colour in the foliage, not only unpleasant to look upon, but also an indication of want of good condition.—T. BAINES.

If "Enquirer" (p. 466) cultivates his Camellias in the same way as we do, I can assure him that exposing them to the sun, either in or out-of-doors, during the greater part of the summer will do them much more good than harm. The Camellias which bloomed best with us during the past winter were specimens planted out in the conservatory; but all the lights were off the house last year from May to October, and, as will be remembered, the sun was exceptionally powerful last summer. I am of opinion that the less all plants that have either to produce fruit or flowers during winter are shaded in summer the better. I am not so fond of shading now as I was at one time, as I have frequently of late strongly suspected

it to be injurious. It is not the general exposure to the sun which causes the foliage of Camellias to blister, nor is blister confined to Camellias. On the contrary, it may often be seen on Vine and Pine leaves; and, indeed, on nearly every plant grown under glass. Bad speckled glass is the sole cause of blister, as any one may prove who will examine the roof of a glass house under which blistered leaves occur when the sun is out; a bright spot, like that produced by a lens, will be seen on each blister. We have sometimes found these specks so powerful that a match could be ignited under them at a few yards distant from the glass on a bright day. Therefore if they will do this no one need be surprised if leaves are blistered. Rather than shade the whole roof of a house glazed with speckled glass, we have had the specks all dabbled over with white paint, and this has effectually prevented burning while it did not exclude much sunshine.—CAMBRIAN.

BEGONIA ABEL CARRIÈRE.

THIS is the result of a cross between *B. discolor* and *Rex*, *discolor* being the male parent. *Rex* and its varieties are mostly stemless or nearly so, and have persistent variegated leaves which are continually being reproduced; the roots, too, are fibrous or filiform. *B. discolor*, on the other hand, is tuberous, caulescent, and has leaves uniformly green on the upper side and red on the under, whence the



Begonia Abel Carrière.

specific appellation *discolor*; moreover, the stems, and consequently the leaves, are annual. It will therefore be seen that these two plants differ greatly, both in appearance, mode of growth, and general character. The hybrid in question is the result of crossing these two very different species, and it participates in the characteristics of both its parents. It has the aspect and growth of *B. discolor*, but with variegation and marbling on its leaves which remind one of *B. Rex*. Its habit of growth is also slightly modified, and its aerial portions last much longer than those of *B. discolor*. The roots, too, are fleshy and smaller, less so, however, than those of *B. discolor*, which form tuberous masses. As for the hardness of this variety, we can say but little at present, but it will endure more cold than *B. Rex*. New varieties, crosses between *B. discolor* and *Rex*, produce bulbets like *B. Rex*, but in smaller quantities, and always much more slowly, a state of things which may explain the facility with which they may be kept in leaf during the winter. These bulbets are neither uniform in size nor form. The two species in question were crossed in 1875 by M. Svahn, who collected the seeds of the hybrids thus produced, and sowed them again the following year. From these seedlings were obtained eight varieties, which have been introduced into the market by M. Bruant, a horticulturist of Poitiers. One of these is the *Abel Carrière* variety, of which the annexed is an illustration. It is an upright-growing plant, with a straight, strong, fleshy-ramified stem, which with the leaf-stalks of

a red colour. It often reaches a height of 18 in., its general form reminding one of that of *B. discolor*. The upper surface of the leaves is silvery, marbled with rose, and the under side pale pink. The flowers are also pink, and closely resemble those of *B. discolor*.

This variety, in addition to its other merits, possesses the recommendation of being perfectly hardy, as the experiments of M. Bruant prove most conclusively. Ten plants of it were left out in the open ground at the beginning of last winter without shelter of any sort. In November, a hard frost, with the thermometer at nearly 3° Fahr. below freezing point, left their foliage intact, although the parent *Begonia discolor* was completely stripped of its leaves a long time before. Some days after, a cold of nearly 6° Fahr. below freezing point stripped them almost completely, a few leaves, however, remaining at the base. By the 25th of January, after having gone through a severe winter, during which the temperature sank several times to 18° Fahr. below freezing point, in spite of their being planted in very damp soil, they appeared to have passed through the trial unscathed. The eyes at the collar of the root were very apparent, being well swollen, and evidently in an excellent condition for an abundant growth. It would seem, therefore, that certain of these new *Begonias*, which remind one, owing to their variegated foliage, of their congeners in the hothouse, may be grown in the open ground with perfect impunity. Such addition to our list of hardy ornamental plants is a welcome one.—“*Revue Horticole*,”

Bright-flowering Cacti.—At this season the large-flowering Cacti are very showy, producing, as they do, large blooms, and, when properly treated, abundance of them. For either greenhouse or window culture they are well adapted, and not being very pretty objects when not in flower, they are very accommodating, bearing considerable adverse treatment if not making their growth, at which period, however, they should be well exposed to the sun and get a good supply of water. The soil best suited for them is a good rich sandy loam, not chopped up very fine, as the roots require plenty of freedom to creep freely through it; plenty of drainage to allow the water to pass off is also necessary. During the cold wintry days they should be kept almost dust-dry, as anything like a stagnant soil is certain destruction to the roots. They are easily propagated by means of cuttings. Any sized cutting is almost sure to grow. Cut off a piece of a branch, put it in sand, and in a few weeks it is rooted, when it can be potted, and will shortly make a good plant. They have quite a variety of colours, some of a bright crimson, others of a pink, while some of them are almost pure white. *Cereus Corderoyanus* is a bright scarlet, *C. Gordonianus*, a rose-coloured one, and *C. crenatus*, a large-flowering, creamy-white, of good form, and well worth growing.—M. MITTON, in “*Albany Country Gentleman*.”

Mr. Peacock's Catalogue of Succulents.—We are informed by Mr. Croucher that certain printers' mistakes account for the errors in the spelling of the new catalogue, which, in any case, are of slight importance, and may be easily remedied in another reprint. The satisfactory thing is that the owner of the best and richest collection of succulent plants ever got together has published for the convenience of all interested in the subject a complete catalogue of his collection. If other amateurs were to do as much for their favourite classes of plants as Mr. Peacock has done for his, one could hardly imagine to what extent our garden wealth would grow. We do not know, however, a more unsatisfactory class of plants, because, do what one may, there is nothing will make the public take to their cultivation. At one time we could not understand this, and believed there was a future for them with the general public; but, notwithstanding the various effective ways in which Mr. Peacock has shown them to us, they do not seem to be more popular. We confess that there seems a reason for this, and that is the uniform aspect presented by them. They are, to a great extent, the same all the year round, and even Hawthorns or Roses could hardly withstand such a test as that. Yet there is one section which is deserving of attention from the cultivator, and that is, the kinds that flower freely and handsomely. As frequently grown, the Cacti do not flower in a remarkable degree; but some species, fairly well grown, flower in the most lovely manner, and Orchids themselves are not so exquisite in show of bloom as some of the flowering Cacti. It seems to us that if anything remains to be done by one who has already done so much for this strange family, it would be to make known or get together in some way the really fine-flowering kinds of Cacti, and there is nobody so well fitted to find out what is valuable in this way as Mr. Croucher.—R.

Todea superba.—A fine group of this elegant filmy Fern is now one of the leading features at the Pine-apple Nursery. A remarkable fact connected with these is that they have been subjected to as much as 14° of frost in an unheated house during the past winter.—W.

THE FRUIT GARDEN.

SWELLING OF FRUIT.

THERE is a considerable difference of opinion among cultivators as to whether size or weight in fruit are best attained by a comparatively high or low temperature. I saw it recommended some time since in a calendrical column to subject forced Strawberries to a temperature of 90° or 100° if high finish and size were desired, and in another contemporary I read that the best and finest-looking Peaches which appear at our horticultural exhibitions are those which have been subjected to excessive high temperatures during the swelling period. Is this so, may I ask? To me such advice seems to savour of inexperience, as those who follow it will find out. As regards Strawberries, I have always found that the fruit that was grown in a moderate temperature swelled to the largest size, and was also best in quality in every way. This also was the opinion of the late McEwen, who "swept the decks" as an exhibitor of forced fruit in his time. He was obliged to finish much of his fruit in stoves, but he acknowledged that the temperature of such structures were too high. I see also that "S. D." objects to the exposing of the fruit on pot plants to the sun late in the spring, and he is quite right. When the weather is very dry and bright in April and May, fruit under glass will be of quite as good quality and superior in appearance if its bark is turned to the sun about the time when it begins to colour. I have done this many a time. As to Peaches and Nectarines, I have always found that those forced early or pushed on under a high temperature were the lightest by a good deal, while outdoor fruit, if well matured, was the heaviest, the size being equal in both cases. It is often necessary to push crops on in a higher temperature than is desirable, but moderate temperatures should prevail where practicable. It is much better to start sooner than to force vigorously towards the end.

It is just the same with the Pine-apple. This struck me very much a number of years ago on one occasion when, in order to meet a large demand, about a couple of score of Pines were treated differently to fetch them in together—one lot was pushed on in as high a temperature as they would stand, and the other and earlier lot was held back and allowed to swell leisurely, to end with plenty of air. The fruit of the last were not only the finest-looking, but the heaviest by a good deal. I tested the fruit in the scales, and found in one case that the hurried fruit was about half-a-pound lighter than the other, both being of the same size. I have frequently proved the same thing since.

These are facts of some importance to those who sell their fruit by weight. I am not so sure about Melons, but probably the rule holds good in the case of all fruits. Nor is the reason far to seek, and physiologists corroborate what practice demonstrates. A certain degree of heat is, no doubt, necessary to the production of fruit of the highest quality, but when this figure is exceeded it is at the expense of solidity of tissue, which requires time to form. Hard forcing may cause distension, but it is that kind of distension which we see in a bladder—hollow. The effects of a too high temperature are well exemplified in the case of the Pear previous to the stoning period. There is nothing more certain than that the crop can be made to drop at that stage by simply raising the temperature to a certain point. After stoning this result would not happen, but premature ripening would be the consequence, and the difference is only one of degree. We notice, as regularly as the season comes round, that the largest and finest fruit is always that furthest removed from the hot end of the house or furthest from the pipes, and is generally on the top of the tree where the last fruit ripens.

J. S. W.

FRUIT GROWING IN ENGLAND.

Now that the export of American Apples is becoming an important business for fruit growers everything connected with the subject becomes a matter of interest to them. A discussion on the growing of fruit for market in England has recently taken place in the *LONDON GARDEN*, from which we gather the following statements, and which naturally have some bearing on the character of the foreign market: A correspondent of that journal says that the demand for fruit in England has increased during the past few years "to an enormous extent." It always finds a ready sale. Notwithstanding the cheap and quick transit from the Continent, and the excellence of the Apples from America, the extension of fruit culture is on the increase. We are told by one writer that about 30,000,000 dols. are annually paid to other countries for imported fruits. Another correspondent of the same journal says that nearly 50,000,000 dols. were expended last year for fruits and vegetables imported into England. It is supposed that the city of London consumes about a million, and a half. We are informed that England receives fifty times as much as fifty years ago, the prices varying but little at the two periods. It

appears that the same trouble occurs there as in this country, namely, low prices and a want of demand in abundant seasons, and large quantities rot when the market is over-stocked, and the prices do not pay for gathering. The mode of preserving by canning, so extensively adopted here, is recommended in that country in such cases. One of these correspondents states that in Kent first-class Keswick Codlings brought only fifty cents per bushel, and of this sum one-half was paid for conveyance to market and expenses. Another correspondent says that many of the market gardeners near London left tons of Plums to fall and rot on the ground in 1875, the market being overstocked with fruit from the Continent. The same writer mistakenly asserts: "The American fruit grower, who obtains 400 bushels of Apples every year from his rich, cheap soil without manure, and with a minimum of labour and cost, can easily compete with the English grower, who pays an annual rent equal to the whole purchase money of his competitor's land, and has to spend fully as much more in manure and labour; but if the Western grower should, by fertilising his land, double its yield, the extra 400 would not be grown at a profit." American orchardists, who have adopted the same opinion as this writer, are the very men who make fruit growing a failure. Their second-rate, scrubby, knotty Apples find a slow sale at a low price. Those who, with good culture, manuring, thinning, assorting, and careful packing, place the finest specimens before purchasers, obtain good prices and ready sales, and as soon as their products become known, they are eagerly sought on account of their excellent quality, even in abundant seasons. In looking toward a European market it would be extreme folly to attempt to send bad fruit that long distance with the expectation that it would pay expenses, and the damage to the reputation of American fruit, caused by such shabby attempts to thrust poor fruit on purchasers, would be many times greater than any possible gain.—"Country Gentleman."

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

JUNE 10.

THE plants exhibited at this meeting, though by no means numerous, comprised several interesting novelties, to some of which first-class certificates were awarded. These were—

Cattleya McMorelandi (Veitch).—A superb variety, with large blossoms having sepals of a delicate blush tint, and a shallow lip much crisped at the margin, and blotched with bright orange.

Begonia Mrs. Arthur Potts (Veitch).—A beautiful variety in the way of the fine Peruvian B. Davis, but the blossoms are much brighter in colour, and produced more abundantly.

Gloxinia Yakob Khan (Veitch).—A handsome form belonging to the erect-flowering section. The blossoms, which are large, have a spotted throat and a broad ring of rich purple on the limb, copiously spotted with the same colour on a white ground.

Ochna multiflora (Williams).—A remarkable stove shrub shown in a fruiting stage, from four to six green Pea-like fruits being placed on a bright red fleshy disc surrounded by reflexed calyx segments of the same colour.

Imantophyllum concinnum (Williams).—A beautiful Amarylloid, similar in habit to the old I. Aitoni, but with blossoms of bright orange-red colour.

Begonia Marie Bouchet (Laing).—A splendid double-flowered variety which has elsewhere received the same distinction twice previously, and which has been already described.

Begonia Clovis (Laing).—Another superb double-flowered kind, similar to the preceding, slender in habit, and having large finely-formed blossoms, with deeply-toothed petals, very bright in colour.

Begonia J. H. Laing (Laing).—A fine addition to the single-flowered forms, being remarkably robust in habit and free flowering, the flowers being large, good in form, and bright in colour.

Begonia Souvenir de Gand (Osborn).—Also a kind of sterling merit, and well deserving of the distinction which was conferred on it.

Pelargonium Nellie Hayes (Hayes).—A robust variety, good in habit, and bearing large trusses of delicate pink blossoms, with blotches of a deeper shade.

Pelargonium Maid of Kent (Hayes).—A very useful variety, similar to the P. Duchess of Bedford, but of a better habit, freer flowering, and of a more delicate tinge.

Saxifraga Wallacei (R. H. Society's Garden).—A handsome Alpine, allied to the fine Algerian *S. Mawana*, but freer, both as regards growth and flower, and more amenable to cultivation.

At the last meeting the following hardy plants were also certificated, but overlooked at the time:—

Primula sikkimensis (Dean).—A herbaceous variety with long narrow leaves and pale yellow bell-shaped pendent flowers, produced in scapes, on tall stems; a very distinct and pleasing variety, and perfectly hardy.

Polyanthus superbus (Dean).—A full border variety, having large spires of flowers of good form, the eye clear lemon; ground colour, deep maroon-crimson, shaded off like an Auricula.

Miscellaneous Plants.—Of these Messrs. Veitch & Sons exhibited a choice collection, the most noteworthy amongst which were the beautiful white-flowered *Cattleya Wagneri* and the lovely *C. Mossii* *delicata*. The ornamental *Torenia Fournieri* was shown in this collection in fine condition, and displayed its distinct erect habit admirably, contrasting well with the yellow-flowered *T. Bailoni*. From the same establishment came also *Geniera Cheloni*, a remarkable hybrid between *G. macrantha* and *Dolichodora tubiflora*. The blossoms are tubular and from 2 in. to 3 in. long, of a pale flesh tint, and downy on the outside. A pretty white-flowered variety of *Weigela* (*W. hortensis* *nivea*) was also exhibited, and though the specimen was small, it was enough to show that eventually it will be a very desirable plant. A remarkably handsome *Lilium*, bearing the name of *L. bulbiferum* *aureo-variegatum*, was shown by the same firm in fine condition. Its flowers, which are produced in umbels, are of a bright orange-red colour, with the margins of the petals of a paler hue. *Rhododendron Prince Leopold* and *Duchess of Teck* were likewise very attractive; also the brilliant little *Begonia Davis* and the elegant *Boronia elatior*; the showy *Dendrobium Bensoni*, *D. tortile*, with its singular twisted sepals, and *Cypripedium Parishii* were also conspicuous amongst the Orchids; and amongst plants remarkable for their singularity were the *Arum trilobum*, with trilobed leaves and flowers, with a chocolate-coloured spadix and purplish spathe, and *Beckia astartoides*, an interesting shrub with Heath-like foliage and numerous small white flowers. From Mr. B. S. Williams, Holloway, came, in addition to those already alluded to, the rare *Cymbidium Parishii*, an Orchid described elsewhere in our columns. Messrs. Osborn & Sons, Fulham, contributed a collection of hardy plants, amongst which were *Saxifraga Wallacei*, *Anthericum liliastrum*, the charming Alpine *Myosotis rupicola*, *Iberis saxatile*, the white-flowered variety of *Erimum alpinum*, and others. The same firm also exhibited cut blooms of hardy *Azaleas* in rich variety of colour. From Mr. W. Fisher, Woodlands, Clapham, came admirably-grown examples of *Saccolabium retusum* and *Dendrobium Falconeri*, to which a cultural commendation was awarded. Mr. Turner, of Slough, sent good plants of *Polygonatum Illuminator*, a superb new kind, having brilliant cerise blossoms with a white eye. Messrs. J. Laing & Co. showed, in addition to the *Begonias* mentioned above, *B. Rosy Box*, *Maude Churchill*, and a collection of cut blooms of *Pansies*. Of the latter a choice exhibition also came from Mr. Fleming, Berwick, which received a cultural commendation. Mr. G. Lee, Clivedon, sent cut blooms of *Viola argentea*, which were rather large, and of a greyish-blue tint. A form of the white *Lilac* was exhibited by Messrs. Paul & Son, Cheshunt, which showed a great improvement on the original, both as regards size of flowers and their abundance. From the Society's gardens was sent a collection of Cape *Polygoniums*, many of them original species. *P. Schottii*, with its very rich-coloured blossoms; *P. crispum*, *P. cuculatum*, and *P. ignescens* were amongst the most noteworthy. From the same source also came examples of the exquisite *Saxifraga lantoscana* and others; also cut blooms of *Begonias*, one flower of which (*Nellie May*) was unusually large, and of a pleasing rosy hue. Cut flowers of seedling *Columbines* were also shown from Chiswick, and afforded a striking instance of the many hues which the seedlings of this variable plant assume. Some admirable examples of a species of *Rhododendron* from Bhotan were also shown in the form of cut blooms, which were large, and varied from white to a rose tint. *Choretis glauca* was also exhibited in flower by Mr. J. Burnett, The Deepdene, Dorking. It much resembles *Pancratium speciosum* in general appearance, but the umbels are fewer in occurrence. It is no novelty, but its flowering is of a somewhat rare occurrence.

Fruit.—About half-a-dozen Melons only engaged the attention of the Fruit Committee. These were contributed by Mr. Miller, Clumber, who showed a green-fleshed netted Melon named *William Tillery*, to which a first-class certificate was awarded. The same exhibitor also sent a variety named *Clumber*. Mr. J. Atkins, of Wantage, also sent Improved *Colston Bassetts*; and Mr. Johnston, Bayham Abbey, Freeman's *Luscious*.

ROYAL NATIONAL TULIP SOCIETY.

The closing days of the great Whitsun exhibition at Manchester were enlivened by the annual show of this Society, which took place in the Botanical Gardens, Old Trafford, on June 5. At one time it was feared the show of Tulips would be a very poor one, but the change to mild, growing weather on the 29th ult. greatly helped the development of the flowers, and they grew into size and coloured with remarkable rapidity. The best blooms were decidedly those of the Rev. F. D. Horner, Kirkby Malzeard, Ripon, who had taken the precaution of covering his bed with a glass erection, and thus brought on his flowers with more rapidity than would otherwise have been the case; the next most successful growers were Mr. Thomas Haynes, of Derby, and Mr. William Whittaker, of Salford.

The show was larger than was expected, and the flowers, on the whole, large and well marked. The champion prize, that of a cup for the best twelve dissimilar blooms, two feathered and ten flamed flowers of each class, was won by the Rev. F. D. Horner, who had *Madame St. Arnaud*, Dr. Hardy, Commander, Modesty, Mrs. Cooper (a beautiful new feathered byblomen of rare quality), *Talisman*, *Demosthenes*, *Duchess of Sutherland*, *Bessie*, *Mabel*, *Ajax*, and *Mrs. Lomax*. Modesty, Bessie, Commander, *Madame St. Arnaud*, Dr. Hardy, *Talisman*, and *Mabel* were in beautiful form, pure and well marked. The second prize was taken by Mr. Thomas Haynes with *Aglaia*, Dr. Hardy, Mrs. Lea, George Hayward, Queen of the Universe, *Helena Mary*, *Duchess of Sutherland*, *Mrs. Lomax*, *Adonis*, and *Sir Joseph Paxton*. *Sir Joseph Paxton*, shown in its feathered as well as flamed form; *Helena Mary*, Dr. Hardy, *Aglaia*, and *Adonis* were finely shown. The Rev. F. D. Horner had the best stand of six dissimilar Tulips, one feathered and one flamed of each class; he showed *Talisman*, *Mabel*, Commander, *Sir Joseph Paxton*, *Mrs. Cooper*, and *Barlow's Bion*. Mr. Thomas Haynes being second with *Sir Joseph Paxton*, *Aglaia*, *Heroine*, *Bessie*, *Sulphur*, and *Violet Amiable*. Mr. William Whittaker was third. There is always a similar class for half-guinea subscribers, and this is provided to give those having small collections a chance to win a prize. The first was taken by Mr. H. Houseley, who had good blooms of *Lord Byron*, *President*, *Mabel*, and *Violet Amiable*, the latter two being shown both feathered and flamed, Mr. R. Yates, of Leigh, being second. The best three feathered and the best three flamed flowers came from the Rev. F. D. Horner, who had in the first case *Mrs. Cooper*, *Storer's No. 6*, and *Heroine*; and in the second *Lady Sefton*, *Adonis*, and *Orion*. Mr. Whittaker came second with three feathered Tulips, viz., *Adonis*, *Mrs. Lea*, and *Masterpiece*; and Mr. T. Haynes was third with three flamed Tulips, viz., *Aglaia*, *Sir Joseph Paxton*, and *Bessie*. In the class for two Tulips, the Rev. F. D. Horner was again first, with Dr. Hardy and Modesty; and in the maiden growers' class for the same number of flowers, Mr. James Turner was first with *Abbot's Gem* and *Aglaia*. In the class for the best feathered and flamed Tulip in each class, six classes in all, a goodly number of flowers was staged, as ten prizes were awarded in each class, making sixty in all, with the exception of the class for feathered bizzars. The Rev. F. D. Horner took the first prizes in all the rest, Mr. T. Haynes being first in the former class.

Prizes were also awarded for breeder or unbroken Tulips. These are very beautiful in their self-form, and where large, pure, and finely tinted, they were highly attractive. In the class for six breeders, two of each class, viz., bizzars, roses, and byblomen, Mr. T. Haynes was first, with Dr. Hardy, *Talisman*, *Mabel*, *Adonis*, *Madame St. Arnaud*, and *Mrs. Lea*. When these break or rectify, it will be into the character of the Tulips whose names they bear; but some may be of a finer strain than others. The Rev. F. D. Horner came second, with *Alice Grey*, *Musie*, *Annie McGregor*, *Dr. Dalton*, *Lady Grosvenor*, and *William Lea*; Mr. D. Barber was third. The best three breeders also came from Mr. T. Haynes, who had *Madame St. Arnaud*, *William Lea*, and *Alice Grey*; the Rev. F. D. Horner was second. There were also classes for the best rose, the best bizzar, and the best byblomen breeder.

The premier feather flower was Mrs. Cooper, from the Rev. F. D. Horner; the premier flamed Tulip, *Sir J. Paxton*, from Mr. T. Haynes; and the premier breeder Tulip, *William Lea*, from Mr. David Barker.

National Rose Society.—A meeting of the General Committee was held at the Horticultural Club on Tuesday, when some brief hints on the culture of Roses were agreed to; these will be circulated amongst the members and the different societies which have affiliated themselves with the National Society. Arrangements for the Crystal Palace exhibition were also made.

Erratum.—It was inadvertently stated in our report on the Whit Monday show at South Kensington that the first prize for fifty pots of Musk was awarded to Mr. Reeves, of Acton; it should have been to Messrs. J. & J. Hayes, of Edmonton.

OBITUARY.

DR. MOORE.

ALL who know anything of the horticulture of Ireland will learn with great regret of the loss of its most distinguished exponent, for Dr. Moore and Glasnevin have long led the horticulture of Ireland; few reputations were better deserved, as Glasnevin is a beautiful and richly stored garden, and David Moore was the beau ideal of a curator or director, which title he recently obtained. Always active and vigorous, full of enthusiasm for plants in recent years as much as in his younger days, he yearly continued his travels throughout Europe in search of beautiful or rare plants for his garden. Now in Sweden, now in Austria, another year in the south of England—anywhere where there was a botanic garden or a fine collection of plants, David Moore was sure to be there sooner or later in quest of interesting subjects for Glasnevin. The stay-at-home curator is sure to have a poor garden, and Dr. Moore was most wisely allowed the fullest liberty for travel, and took advantage of it in a way most profitable to the Garden and Ireland. Death has lately been busy in the ranks of leading horticulturists. It is sad to record within such a short time the loss of many of the most distinguished men connected with our great gardens—McNab, and Moore, and Niven, of Drumcondra, all within a short time of each other. David Moore was one of a band of young Scotch gardeners who, judging by their work and their progress in life, certainly were men of which any country might be proud, and included the energetic Niven, of Drumcondra, the Curator of Glasnevin before David Moore; Fraser, the eminent landscape gardener, and author of a well-known guide to Ireland; and the dignified and much-esteemed Wilkie, of Phoenix Park, Dublin, all now no more.

Dr. Moore was a native of Dundee, and in early life commenced his career as a gardener in the gardens of the Earl of Camperdown, at Camperdown, near Dundee. He afterwards went to the nurseries of the late Mr. James Cunningham, at Comely Bank, Edinburgh, where he remained till 1828, when he left to take the appointment of assistant to the late Dr. Mackay, Director of the Dublin University Botanic Garden. Under such a master all young Moore's tastes for natural history were cultivated, and he rapidly became an authority on the Irish plants. About 1834 the Ordnance Survey of Ireland was commenced, and David Moore was appointed on it. In 1837 the first volume of its memoirs was published, under the title of the "Ordnance Survey of Londonderry," and contained a memoir on the geology of this district by Captain Portlock, on its political and antiquarian history by George Petrie and J. O'Donovan, and on its botany by Dr. Moore. This was Moore's first contribution to science, if we except the assistance he gave to his old master, Dr. Mackay, in the production of the "*Flora Hibernica*," an assistance gratefully acknowledged in the introduction to that work. The projected survey of Ireland was, however, commenced on far too elaborate a scale to be in like manner continued; and although a vast amount of material was collected towards elucidating the history of others of the Irish counties, yet these were never published, and the botanist of the survey soon after this date resigned his post, and was elected Director of the Gardens at Glasnevin, then belonging to the Royal Dublin Society, with the improvements of which the name of Dr. Moore will ever be connected. Often hindered for want of funds, with but few sympathetic spirits to cheer him on, the Doctor laboured long and hard, until he has, as now, made these gardens to hold their own amid the gardens of Europe. Pleasantly situated by the bank of the little Tolka, associated with the memories of Tickell, Swift, and similar men, Nature has done much for them—the gardener's art but little.

It is now a story—too well known to need repeating—how Moore, working in unison with Nature, made these gardens useful to the practical gardener as well as to the botanist and citizen. Many of our readers will recollect the numbers of new plants first introduced to our gardens from Glasnevin, the numbers of interesting plants first flowered or fruited there, and the numbers of new hybrid forms first raised there. Of Dr. Moore's more original botanical work we can here only mention the "*Cybele Hibernica*," undertaken conjointly with A. G. More, F.L.S.; his works on the Irish Mosses; on the Irish Liverworts, and on the Irish Grasses. For a record of his practical researches, of his many tours to Russia, Italy, Spain, France, Germany, and Norway in quest of botanical information, we have left ourselves no space. He was a member of the council of the Royal Irish Academy, whose president, Sir R. Kane, at the meeting last evening expressed deep regret at his death, and observed that he had contributed most valuable and interesting memoirs upon vegetable physiology and upon the botany of Ireland. He was also a member of the Linnean Society, and a corresponding member of the leading botanical societies of Europe. He died early last Monday

morning in the Garden, and was interred at Mount Jerome Cemetery at Dublin on Wednesday. He was for more than forty years curator and director of the Royal Botanic Gardens at Glasnevin, and was for some time assistant examiner in botany in the Medical School of the University of Dublin. As a recognition of his services, the University of Zurich conferred upon him the degree of Doctor of Philosophy in 1865.

The Dublin "Daily News" of the 18th inst. says that, "Dr. Moore's eldest son is Curator of the College Gardens, Dublin, and, since his appointment to that post, has given unqualified satisfaction to the board of that college and the medical professors who utilise the gardens and its collections for their lectures. Up to a few days before his death Dr. Moore was a man of very active habits and excellent health. On Friday, feeling some unpleasant symptoms, he called on Dr. Butcher, who carefully examined him. His ailment turned out to be a very serious one, and the severity of the symptoms increased with alarming rapidity. Dr. Butcher was unremittent in his attentions, but no care or skill could avert the fatal end. Dr. Moore expired on Monday at 2.30 a.m. We presume that his eldest son, an accomplished practical botanist, carefully trained at Glasnevin and afterwards in some of the most famous foreign schools, will be promoted from the curatorship he now holds to the more valuable post held by his lamented father."

H. NOEL HUMPHREYS.

It is with deep regret that we have to announce the death, on Tuesday morning, the 10th inst., of Henry Noel Humphreys, who, although only, as one might say, an occasional worker on horticultural subjects, was long known in connection with them. After considerable artistic training in early life, he, at a time when art was not so much a fashionable profession as at present, deserted it for literature; but, before doing so, he had already, when a very young man, done many beautiful drawings of plants for a publication issued in connection with the Birmingham Botanic Gardens nearly fifty years ago, the name of which, for the moment, escapes us. Years afterwards, friendly with the Loudons and related to them by marriage, he again took up botanical drawing for a time, illustrating Mrs. Loudon's well-known works on the "Flower Garden," "Hardy Bulbs," &c., books most successful in their day, and still on the library shelves of many lovers of plants. He was very intimate with Mr. Loudon when he lived in Porchester Terrace, Bayswater, and wrote some memorials of him in *THE GARDEN*. Then came a long interval of active literary and other employment, and a total severance from any horticultural work, until the time of the appearance of Moore & Ayres' "Magazine of Botany," which was illustrated by some beautiful sketches from his pencil. At that time, and several years before, he was acknowledged to be one of the most graceful artists on wood in London, and much sought after by publishers and authors requiring tasteful work in that way. Again, after a considerable lapse of years, he undertook the drawing of a number of beautiful Alpine flowers, intended as the first series of a work on the subject. To do this he remained at York for nearly two months and made a series of studies, which are admitted by all who have seen them to be very beautiful, and in which he has caught well the delicate grace and exquisite beauty of these flowers. In this case, for the first time, so far as we know, in drawings of the kind, the plants were drawn not merely in detached portions, which is the rule in books, but as they grew on the rocks with their surroundings of Moss and other minute plants, so that one gets an accurate idea of their size and character, as well as of the beauty of the individual parts. No man could have devoted more painstaking and loving attention and precious time to a work of this kind than did Henry Noel Humphreys. His early love of drawing plants being once revived, he continued that work till a day or two before his death, making studies from plants gathered in the gardens round London, and frequently drawing a plate for *THE GARDEN*. This slight sketch of his labours in one direction may serve to give a feeble notion of the wondrous activity of the man in other and in different directions, some of which have no relation whatever to our art. He travelled much, making many landscape and other sketches on his way, and was an excellent linguist. Those who knew him in early life speak of him as one of remarkably bright parts and ready wit, qualities which he retained to the end. His abilities and devotion to anything which he took in hand were such, that the results could only be appreciated by those who knew in how many diverse ways his energies were devoted. He died at his house in Westbourne Square after an illness of but a few days, aged seventy-two years. He was born at Birmingham, and educated at King Edward's Grammar School and in Brussels. After a residence in Rome, he, in 1840, published his first work, the descriptions to "Views in Rome," by W. B. Cooke. He was joint author with Mr. J. O. Westwood of "British Butterflies and their

Transformations," published in 1840; of "British Moths and their Transformations"; and author of "Illuminated Illustrations of Freisear's Chronicles," in 1843; of "The Parables of our Lord" (Illuminated), in 1846; of "The Illuminated Books of the Middle Ages" (folio), and "The Art of Illumination," in 1849; of "Ancient Coins and Medals," illustrated with fac-similes of Greek and Roman coins, in relief, in 1850; of "The Collector's Manual," in 1853; of "The Coinage of the British Empire," in 1854; of "Stories by an Archaeologist and his Friends," in 1856; of "Ocean Gardens," in 1857; of "Butterfly Vivarium, or Insect Home," in 1858; of "Göthe in Strasburg: a Dramatic Novelle," in 1860; of "Holbein and the Dance of Death," in 1863; of "A History of the Art of Printing," in 1867; of "Masterpieces of the Early Printers and Engravers," published in 1870; of "Rembrandt and his Etchings," in 1871; of several novels, published anonymously, and of tales, magazine articles, and other works, and numerous contributions to journals.

Canon Beadon.—We have also to record the death of that veteran horticulturist, to whom allusion was lately made in THE GARDEN, viz., the Rev. Canon Beadon, Rector of North Stoneham, near Southampton, which took place on Tuesday last, at the great age of 102. He was born December 3, 1777, and it will be remembered that Her Majesty wrote him a letter on his attaining his hundredth year.

EFFECTS OF THE WINTER.

AMONGST the uninjured in the gardens here may be mentioned all the kinds of Pinus, including excelsa and insignis; all sorts of Picea, including nobilis, magnifica, amabilis, cephalonica, lasiocarpa, Nordmanniana, Pinsapo, and others; Cedrus atlantica and Libani; Abies Douglasi, Menziesi, polita, canadensis, and orientalis; Retinospora obtusa, pisifera, filicoides, squarrosa, plumosa, and plumosa aurea; Cryptomeria japonica; Araucaria imbricata; Torreya myristica, very slightly browned; Cupressus Lawsoniana, L. evicta, and L. aurea; Chamaecyparis spherioidea variegata; Cephalotaxus Fortunei, and drupacea; Juniperus chinensis, c. aurea, drupacea, occidentalis, phoenicea, virginiana, and v. glauca; Prunopitys elegans; Thuopsis borealis and dolabrata, this last even greener than usual; Thuja various, these also wonderfully fresh; Biotas, all fresh; Cerasus lusitanica and laurocerasus, Wellingtonia and Cedrus Deodara, some of the tips of which are browned; and Hibiscus syriacus. Amongst the damaged are Magnolia grandiflora, Cryptomeria Lobbi, Sequoia sempervirens, Cupressus macrocarpa, Phillyrea angustifolia and latifolia. The killed consist of Verberna triphylla, Ceanothus azureus, Myrtus parvifolia, Eucrocarpus scaber, all of which survived the winter of 1877-78; Escallonia macrantha; Cupressus lusitanica, Corneana, and sempervirens, but this last had been recently moved.

ANON.

—Effects unaccountably variable as regards the winter show themselves even in the same localities. Large Bays on dry, sandy soil, even under the immediate protection of high walls in the northern counties, are in some places killed down to the ground, whilst in others not far distant they are little injured. Hollies have had their last summer shoots killed back, and are in a denuded condition of leaves. In one garden all the Pampas Grass is killed outright, or nearly so, and in another garden adjacent this and other plants are little the worse. In one large establishment in the midland counties, many Wellingtonias, planted when first the tree was distributed, are either killed, or so far injured as to be worthless. Cedrus Deodara has suffered severely, whilst, standing close to it, Cryptomeria japonica is as green and fresh as if we had passed through a mild winter. These are only a few instances of the many that have come under my notice of the very partial effects left by the late severe and protracted winter.—P. G.

—The following is the condition of hardy and half-hardy plants and shrubs near the shore of the Atlantic in Cornwall: Killed—Abutilon striatum, Aster argophyllus, Calceolaria aurea floribunda, Cassia corymbosa, Escallonia macrantha, Eucalyptus globulus, Fuchsia (all killed to ground), Pelargonium (various), Locust tree, Physianthus albilorus, Polygonum complexum (several), Spiraea Lindleyana, Veronica (several), Sweet Verberna (Aloysia citriodora), and almost the entire stock of frame plants and cuttings, except Verbenas and Chrysanthemums. Injured severely—Cornilla, Farfingium grande, Habrothamnus elegans, Myrtle, Rhododendrons (some), Veronica Andersoni, Vitex Agnus-Castus. Injured slightly—Camellias, in foliage (some), Eucyonius japonicus, E. variegatus aureus, Laurel (some), Myosotis disitifolia, Ozothamnus thysoides, Taxodium sempervirens. Escaped uninjured—Acacia dealbata, Berberis Darwini, B. intermedia, Boconia japonica, Chamaerops excelsa, Camellias (some), Cryptomeria japonica, C. elegans, Forsythia viridissima, Gunnera scabra, Hydrangea, Japanese Honeysuckle, Primula japonica,

Liquidambar, Louis Philippe Rose, Magnolia conspicua, Maclura aurantiaca, Rose Maréchal Niel (on south-west wall), Myrsine undulata, Paulownia imperialis, Phormium tenax, Symplocos japonica, Sciadopitys verticillata, Schizostylis coccinea, Smilax aspera, Thuja Doniana, Pinus austriaca, P. Pinaster, and P. insignis, three most valuable nurses, which suffered more or less in 1860-61, seem to have escaped uninjured in all situations this season.—J. J. ROGERS.

—Plants in the west of Ireland have suffered considerably; even at Killarney Arbutus and Fuchsia are cut to the ground. Such shrubs as Escallonia, Buddleas, and Laurustinus are much damaged, and the New Zealand Flax is killed. Glengwruff appeared to be the one favoured spot which had escaped any serious injury; the Fuchsia hedges which exist here were very little damaged, and in the charming garden attached to the Eccles Hotel it was hard to believe that there had been any winter at all; even the variegated shrubby Veronica was uninjured. In another garden, at the same place, there were some magnificent clumps of New Zealand Flax; one was 57 ft. in circumference, and only the tips of the outer leaves were browned. Near Dublin, I noticed that the Eucalyptus globulus, though killed to the ground, was pushing up fresh shoots, and I hear that this is also the case at Chislehurst.—A. K. EASTCOTT.

ROSES.

TO DESTROY MOSS ON THE BRANCHES OF ROSE TREES.—These Mosses or Lichens, which are frequently yellow, but oftener of a greyish-green, grow rapidly on Rose trees planted in the open air in heavy, damp soil, as well as on Briers after having been planted for two or three years in light soil. A rotten stake well grown over with Moss is apt to infest the Rose tree which it is supporting. These parasites are easily got rid of in the following manner: Stir up 1 lb. of quicklime in 6 pints of water, which will give a creamy liquid, with which wash the parts with an ordinary whitewash brush. Under this treatment the Moss and Lichens turn red and fall off at the end of a few days, carrying with them the layers of the old bark. The tree soon becomes improved when thus cleared of Moss and Lichen, which always harbour a large number of destructive insects and their eggs. This operation should be performed between the months of December and February, and keeps the trees cleared for upwards of three years. As most amateurs do not like to see their pet trees daubed over with whitewash, we may use lime water instead. This is prepared by throwing 1 lb. of lime into 3 gallons of cold water, stirring the mixture well with a stick, and allowing it to settle. The clear liquid alone should be used. It should be made and used at once, as it will not keep its strength longer than a couple of days. It may be applied with a whitewash brush or the syringe, which should be well washed after use. Instead of lime-wash, cement-wash may be used in the proportion of 1½ lb. of Portland cement to 8 pints of water, and may be applied with a whitewash brush, the syringe, or the garden engine.

WHITE FUNGUS.—This peculiar growth makes its appearance in the middle of summer, and only disappears with the first frosts. It grows in the form of a mass of white filaments, which cover the leaves, buds, and seed vessels with an irregular mass of threads. The leaves which are attacked with this disease speedily curl up, wither, and drop. I have proved that this disease is most rife in dry hot summers, and that Rose trees with a southern or eastern aspect are the first to be attacked. The varieties which are more particularly liable to this disorder are the Géant de Batailles, Caroline de Sansal, and the Lion des Combats. It is easily got rid of by sprinkling the trees with flour of sulphur as soon as the spores are seen upon the leaves. If the disease spreads it must be stopped by repeating the process three or four times. If it still makes head, the infected leaves and shoots must be rigorously cut off and burnt. In order to preserve the young seedlings from this disease, we must sprinkle them and the surrounding soil with flour of sulphur as soon as ever the first leaves begin to make their appearance. The sulphur which falls on the root plays its part in the cure by disengaging a certain amount of sulphurous acid which takes place at ordinary temperatures.

ROSE CANKER.—The Rose tree is frequently attacked by canker, a disease which is developed sometimes as the result of the bark of the shoots having been accidentally bruised, and in others from similar wounds formed by the branches chafing against each other. The prick of an insect will often bring it on, especially if it has deposited its eggs beneath the epidermis, the eggs producing larvae, which make matters worse by still farther disorganising the tissues of the bark. In either case we must thoroughly wash the wound, taking care to destroy the larvae if there are any to be found. The edges of the bark must be deeply pared away, and the new place well covered with a thick layer of grafting wax. J. LACHAUME.

ANSWERS TO CORRESPONDENTS.

Orchids.—I have on blocks several plants of *Oncidium Forbesi* and *Cattleya Mossiae*, which are growing so strongly as to have pushed out beyond the edges of the block; and, fearing they may be injured, could you advise me how to make them grow back, so that they may look more compact and not so one-sided? Could they be cut partially through with a sharp knife, so that more energy might be thrown into the bottom parts? How could I cultivate the *Acanthophippium bicolor*? It grows very strongly, making three large bulbs every season, but I cannot induce it to flower.—ARGONAUT. [This is a difficulty often experienced when Orchids are grown on blocks, and it can in some cases be remedied by plunging the lower part of the lower part of the wood into a pot of compost, and for the same plants when grown in pots, and into which they are thus induced to root. In some cases the block itself may be enlarged with advantage by splicing or tying another piece of suitable wood to it firmly. The result of partially severing, as suggested, will be to induce the back pseudo-bulbs to break or throw out new growths. As the *Acanthophippium* grows so strongly without producing flowers, it is possible the growths do not become sufficiently ripened, to which end allow the plant more sunshine, and water sparingly when the bulbs attain their full size. A one-sided habit of growth is natural to a large proportion of all known Orchids, and especially of *Cattleyas* and other rhizomatous kinds, so that, to obtain compact and symmetrical specimens, one must either plant several individual plants in the same pot, or, what amounts to the same thing, induce the "back bulbs" to break by severing the rhizome between the pseudo-bulbs. It is so unusual for *Cattleya Mossiae* to grow strongly when cultivated on a block, that it would be interesting to know the size of "Argonaut's" specimens so grown, and their yearly proportion of bulbs, leaves, and flowers.—B.]

Roses at Cannes.—The foliage of the *Macartney Rose*, leaves of which have been sent to me, is quite different from that of the *Rosa Camellia*. The leaves of the latter are much larger, and have a gloss resembling that of *Camellia leaves*; neither is this Rose at all like *Rosa rugosa alba*, except in the flowers, which are single. As I did not return home straight from Cannes, I regret that it was impossible to bring one of these Rose plants with me. They were for sale at the *Jardin Mazielle*, which garden, I need not tell you, though small, is, if I may so term it, a perfect curiosity shop of rare shrubs and plants, unfortunately crowded together that most of the finest are badly shaped, and I have great doubts if this Rose has been brought home, or at all events, is to be purchased at an English nursery. I visited *Villa Franzolini*, Lake Maggiore (mentioned some years back in *THE GARDEN*), and never saw anything before to equal the quantity of *Camellias* there; in fact, one approaches the villa through a grove of them, out I come to the opinion, after looking for some minutes on their tens of thousands of blooms, that one's eye rests with much greater pleasure on the *Rose Rhododendrons*, which grow well in that district. The *Pinetum* at Franzolini contains the finest specimens of *Thuja gigantea* I have ever seen, planted in clumps of three. The trees at *Isola Madre*, too, are worth a visit.—J. H. THOMAS, Belmont, Carlou.

Seedling Briers.—I have got a quantity of two-year-old seedling Briers which were not more than their seed-bed early this spring, and are now planted in rows in a shady border, and are of heights varying from 3 in. to 14 in. How soon will they be fit to bud? and should they be used for Hybrid Perpetuals as well as Tea Roses, or only for the latter? and, when the time comes, should the buds be inserted on the main stem close to the sun close to the main stem? Seedling Briers will probably be ready to bud by the 20th July. Hybrid Perpetuals succeed equally well as Tea Roses on this stock. The buds should be inserted on the main stem as low as possible.—A. W. P.]

Gooseberry Caterpillar.—The ravages of the Gooseberry caterpillar this year almost equal those of the locust. Buses and a fortnight ago pictures of health and beauty are now skeletons, the almost total destruction of the fruit being threatened, and eventually the bushes. Is there any other mode of destruction besides hand-picking? Last year there were few or no caterpillars, and the bushes have had their usual top-dressing. E. [Sprinkling lime, especially if mixed with freshly-powdered Hellebore when they were wet is said to be one of the best of the many remedies proposed for the destruction of this pest.]

Primula amona.—We have received a few fine blooms of this beautiful Primrose grown out-of-doors in Mr. Nelson's garden at Norwich. They are of large size, the colours, well defined, and in considerable variety, affording additional proof that it is quite amenable to outdoor culture.

Pelargoniums.—J. W.—Keep the plants in a well-ventilated frame, and, in the case of tri-colours, keep the flower-buds pinched off, and treat the plants liberally. The same applies to the others you mention, except that the flower-buds must only be pinched off till within about a fortnight or so of the time when you require them to flower.

Seedling Petunias.—The blooms of the Double Petunia sent are very fine, the colours bright and distinct, and the flowers of good form and size, and pretty fringed. I think they are a variety well worth growing.

Names of Plants.—C. R.—*Paulownia imperialis*. A. P.—*Tradescantia mundula*. G. R.—Apparently *Pavia californica*. A. E.—*Genista hesperica*.

Names of Fruits.—J. B.—Sir Charles Napier Strawberry.

Primulas.—A. J.—Enquire at some of the principal London nurseries.

Questions.

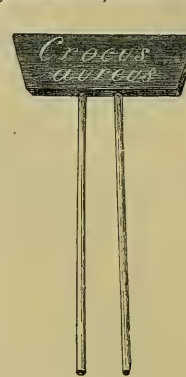
Southern Palms.—In a book of travel which I have been lately reading, a Palm is mentioned as growing in the mountains near Christchurch, Canterbury, N. Zealand. From the name one would naturally suppose that *Kentia* Canterbury was the name of the neighbourhood, but I find that the native name is that it was brought from Lord Howe's Island in lat. 31° S. *Areca sapida* is found in New Zealand as far south as lat. 38° S. Does it extend to the Southern Island? I also anxious to ascertain what is the southern limit of *Jubaea spectabilis* in Chili, and at what altitude it is found there. I shall be much obliged to any correspondent who can give me this information.—E. G. L.

Rhododendron Hardyum.—Who is the raiser or grower of this *Rhododendron*? The size of the truss is large and bold, and the colour nearly crimson. It has stood the late winter almost intact. Its foliage is almost perfect, though next to a Holly and Aucuba, which are sorry to have such a leaf being on either. It would be invaluable to all wishing to grow *Rhododendrons* near a town and in a smoky atmosphere, which seems not to have the slightest effect upon it. I am within 2 miles of the Manchester Exchange.—W. A. S.

Mildew.—Can any of your readers help me to find a recipe against mildew in Roses, given in the *Illustrated Gardeners' Magazine*, published in 1877, and gardening? It consisted chiefly of sulphur boiled over the fire in an earthen pipkin, and I proved so efficacious last year that I wish to make some more, but have forgotten the particulars.—CONSTANT READER.

GARDEN LABELS.

WE noticed in Mr. Ewbank's garden at Ryde a label which differs from any other that we have seen, and which seems to have some very good points about it. A representation of it is annexed. The transverse part of the label is made of a small strip of wood, which is twice painted white and once black. The supports are made of stout galvanised wire, which fit into two holes on the lower edge of the



New Plant Label.

little piece of wood. The name of the plant appears in white letters, which are very easily scratched upon the black surface. Mr. Ewbank prefers these labels to those which are made of iron, because they are less cumbersome, and they cost with him not more than a fifth part of the iron labels. Also it is much easier to scratch a name upon wood than upon iron. They are better in his opinion than labels which are wooden throughout, because the lower parts of these latter are sure to decay in the ground. They have a great advantage over zinc labels because the writing on them is so very legible, and no wetting is required to make it plain. They are not injured by frost, or broken by a knock, which is so commonly the fate of labels when made of terra-cotta. Altogether, on the score of appearance, of duration, of cheapness, and of uprightness in the ground, these Isle of Wight labels are worthy of some consideration. A common carpenter makes and prepares, with three coats of paint, the little transverse pieces of wood for Mr. Ewbank at a rate which does not exceed 1s. 6d. per hundred. A pound of the galvanised wire can be purchased in Ryde for 4d., and any gardener can make the holes, and cut and fit in the supports on a wet day, or when he has nothing better to do. If these labels were made by machinery, the price could be brought down to a very low figure. Mr. Ewbank is taking to this form of label entirely, and he intends by degrees to exclude all others from his garden.

Sheltered Nooks.—These, when formed by boundary walls or low buildings, and not by shrubs or under the drip of trees, can be turned to account for protecting delicate plants which would be likely to suffer in severe winters from entire exposure, and are very useful for striking cuttings of *Pelargoniums* in the late spring and early autumn months. Last year most of mine were raised in a place of this sort, and for the protection that such a locality affords to the more delicate subjects that usually have to rough it in winter in the open borders, I can instance the case of the *Aquilegia cœrulea*. This winter's cold killed all that were entirely exposed, but I have two now coming into bloom that were turned out of their pots about six weeks ago. They had been plunged up to their roots in the place already mentioned with no other protection whatever but the wall, 2 ft. from them. I have now above 100 cuttings of *Pelargoniums* there, some of which had to encounter the frosts in the early part of May, and not one appears to have suffered. I ought, perhaps, to describe the place, for it has peculiar features, rather favourable than otherwise, to the use to which it has been put. It is of a long and irregular shape, open at its north and south extremities; but there are some buildings, which, though they do not close the opening at the north end, afford protection from the keenness and violence of the north wind, and the sun's rays can only reach the little borders during winter in the middle of the day, but they are then scarcely felt, owing to some lofty trees whose branches intercept them for nearly half the year. This I consider to be no disadvantage, as it tends to keep vegetation dormant in this confined quarter, and excessive dampness is provided against by the free circulation of air. In striking the cuttings of *Pelargoniums* and *Chrysanthemums*, I usually, but not always, raise the height of the borders, and supply a little silver sand to the heel of each cutting when planted in this spot.—B. S.

WE learn that Mr. Head has been appointed successor to Mr. Thompson in the management of the horticultural department at the Crystal Palace. Mr. Head was formerly foreman in the flower garden department at Kew, and lately he held the post of superintendent of a garden in India.

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"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE EARLY ALEXANDER PEACH.

VARIOUS notices have appeared in THE GARDEN respecting the existence of an American Peach said to be the earliest of all Peaches; this is the early Alexander. In 1876 I received from Messrs. Capps & Son, of Mount Pulaski, Illinois, two varieties which they described as being earlier and larger than the early Beatrice, which had been largely planted in American orchards; these two sorts are the early Alexander and the Amsden Pine. Although I have fruited the early Alexander, I have hitherto grown it principally with the view of testing it, but after the experience of three seasons, I may venture to say that it is a really valuable early Peach, good either for forcing or for unheated orchard houses, or for walls, and the fruit grower for market may plant it in the fullest confidence of realising a handsome return from it. The fruit is large, of a brilliant colour, and good in flavour, and it will ripen at the same time, and in some cases earlier than the early Beatrice hitherto the earliest Peach known. The early Beatrice, although remarkable for its precocity, is too small; the Alexander when well grown is as large as the Grosse Mignonne.

In a forcing house this year the Alexander ripened ten days before the Early Beatrice; but I do not attach much importance to this fact, as the position of a tree will alter the period of maturity very materially; but the fact is, nevertheless, important, as proving its precocity. In a letter received in July, 1878, from Messrs. Capps, they remark—"Our Alexander Peaches were large and beautiful this year; they were very highly coloured, and commenced ripening about the middle of June, and were all gone by the 10th of July." On walls in England it will probably ripen about July 20; in the orchard house it has ripened from the 6th to the 10th of the same month. I think it may be assumed that a fine early Peach is now in existence. The tree is hardy and grows vigorously; it has stood the severe test of the past winter as well as the hardest English varieties. The Amsden Pine, which I received at the same time, so much resembles the Alexander, that it is hardly necessary to grow the two sorts. The Peach season is now considerably prolonged, the Alexander, Early Louise, Hale's Early, Early Rivers, and Early York being an extraordinary advance upon the Early Nutmeg, Double de Troyes, Early Ann, and Acton Scott.

It is to be hoped that the refrigerating process will not be the means of inundating our markets with American Peaches, but I think there is good cause for thinking that the English grower will have to compete against the Transatlantic orchards, and therefore it may be necessary to select sorts that will ripen before the American harvest begins.

Sawbridgeworth.

T. FRANCIS RIVERS.

Vicomtesse Héricart de Thury Strawberry.—My remarks upon this Strawberry for pot culture (p. 441) were well borne out by the plants from Chiswick shown at the great exhibition held at South Kensington last week. Better fruited plants it would have been difficult to produce, as of the dozen staged all carried from twenty to twenty-five fine ripe fruits, richly coloured, and fit for any table. With them were staged a few plants of the new Early Profic of the Sir Charles Napier type, but although the fruits were a trifle larger, they were not so well coloured, and produced not more than one-half the crop. Properly grown, and that is easy enough,

Vicomtesse Héricart de Thury Strawberry is the best general kind for pot culture.—A. D.

Strawberries and the Frost.—Not only are Strawberry plants not injured by frost when exposed to it previous to being forced in pots, but I am convinced that it does them good. All our Strawberry plants in pots here this spring have been unusually vigorous and fertile, so much so, indeed, that I must say that I never saw any pot Strawberries better, and yet the whole of them were frozen hard for weeks together, most of them only being "strawed" when placed in their forcing quarters. A few fruit of Black Prince shown early in March were admitted to be the best ever seen at that season of the year. Black Prince is not, as has been stated, "an inferior variety in all cases." Here it proves to be a very superior sort, and much preferred to many varieties often recommended.—J. MUIR, *Margam Park.*

BLACK ROT IN THE VINE.

IN this country and in America this disease is known by the expressive appellation of Black Rot. Unlike Oidium and the Phylloxera, it has not been imported into Europe at least within the memory of man. Its history appears to be coeval with that of all Vine growing countries, having been minutely described by all the earliest naturalists who have treated of the Vine. M. H. Mares, in his remarkable treatise on the Vines of the south of France ("Traité des Vignes du Midi de la France") gives a translation of a passage from "Theophrastus" which describes this disease in such striking terms, that no one can fail to recognise in it the Black Rot, which raged with such violence in so many Vineyards in France, Italy, Switzerland, and several other parts of the wine-growing zone in Europe. The antiquity of this pest has in no way diminished its virulence; it seems to have preserved its destructive character through a score of centuries, and differs in no way in the year of grace 1879 from what it appears to have been when the learned Greek wrote his immortal "History of Plants," some 350 years before the Christian era.

The first evil effects of the Black Rot generally make their appearance with the first shoots of the Vine somewhere about the middle of the month of May, and increase in intensity, according to the temperature and the variety of Vine, until the month of August, always attacking the young herbaceous shoots as well as the Grape itself from the time of its formation until it begins to ripen. Rainy weather, a fog, or a heavy dew appear to be amongst the principal causes of the disease, above all if damp weather alternates with strong sunshine; on the other hand, dry weather diminishes the mischief. Vines imported from hot countries, especially those which leaf abundantly, are particularly subject to the Black Rot, the indigenous Vines of the north and centre of France suffering much less. The foreign varieties which suffer most are the Greek Rosaki, noticed by M. Mares; the Asia Minor Chaouch, the Crujidero, the Lignau, the Insolia, and the Muscat of Alexandria. In the southern Vineyards, the Carignan and the Clairette are peculiarly subject to this disease. The first traces of it make their appearance in the form of little round specks or spots of a brownish-black colour. They are unequally distributed over the shoot, leaf, and Grape, upon all of which they appear simultaneously, as shown in the annexed woodcuts. These specks and spots enlarge, still, however, preserving their circular form, and passing from a dark brown to a black. They penetrate more deeply into the young shoot, and either check its growth or dry it up according to their number, and the conditions for their development being more or less favourable. If the attack is very severe the leaves and fruit follow the fate of the young shoot. If, on the contrary, the spots are few in number, and the conditions for their development are unfavourable, the young shoot grows up without suffering irretrievably from the injury; but for all this, the leaf and fruit may suffer very severely, seeing that the leaves and Grapes on a perfectly healthy shoot may be utterly destroyed by disease. These three parts of the Vine, the stem, the shoot, the leaves, and the Grapes are, however, more frequently attacked simultaneously by the black rot; but it also happens somewhat frequently that one or other of them are preserved from the evil according to their state of health as well as to the resistance they can make to the attack of the enemy. When these spots implant themselves on the ribs of the leaf before it has attained its full development, it twists it up, curving it over on its under side, causing it to perform its functions only very imperfectly. As for the fruit, it may be a prey to the disease at any time from its first formation, even before the flower is formed, to the moment it enters on maturity. When once the skin becomes tender the disease has no longer any evil effects upon it.

As for the leaf, as in the case of the fruit, the damage done becomes more serious, and ends most frequently in the drying up and death of these organs as soon as the disease reaches the stalk of

either of them. These black spots which cause such damage to the Vine have some sort of analogy with those which we find on the leaves and fruit of the Pear and Apple. The latter make their appearance under precisely the same circumstances as those on the Vine. They never apparently seem to attack the wood, and they rarely cause the death of the leaf, although they may injure it, but they produce a kind of gall upon the fruit, which may harden the skin and sooner or later cause the fruit to rot. As we have already remarked above, damp or wet weather, heavy dews and fogs, always precede these attacks of Black Rot, and appear to be amongst the principal conditions of its development. A Vine which can be protected from rain, dew, and fog is never attacked by this pest. One fact which we shall quote will prove this assertion most conclusively. We have now growing in the rich soil of our kitchen garden a strong healthy stool of the Agastenga Grape, which has formed three separate cordons. The first of these is trained vertically against an east wall, and covered by a movable shelter, which projects from the wall some 12 in. or 16 in.; the second is trained horizontally against an unsheltered wall with a southern aspect at a distance of some 8 in. above the soil; while the third is trained as an espalier at a couple of yards distance from the preceding. The third cordon shows every trace, more or less serious, of having been attacked by this disease. In 1877, for instance, its fruit was completely destroyed by successive attacks of Black Rot, which, so to speak, burnt up the shoots, leaves, and fruit; but the cordon turned towards the south, on which no signs of disease could be perceived in ordinary years, nearly a quarter of the yield of Grapes was entirely destroyed. We now come to the third cordon, which was

in the production of the disease, and that it shows the possibility of opposing the propagation of the pest by attacking the spores before they have had the time to produce their mycelium on the epidermis of the tender shoot." Up to the present time, in order to guard against the attacks of the Black Rot, we have only taken the necessary precautions at the moment when the disease has made its first appearance—in other words, when it has been too late; but from what we now know it is very evident that we must be on our guard before—at any rate at the exact moment when the spores of this cryptogam are beginning to be disseminated.



Fig. 3.—Young Grapes suffering from Black Rot.

It is not difficult to recognise the Black Rot in the malady which the Italian authors on diseases of the Vine describe as the "male nero" (the black disease), and the "male della bustula nero" (the disease of the black spot), which committed such havoc in certain of the Vineyards of the Italian peninsula in the year 1877. Most of the German authors on this subject, Herr H. Goethe amongst others, speak of this disorder under the name of "schwarzen brenner," or literally the black burner.

This disease is prevalent not only in nearly all the Vineyards of Europe and probably in all those of the ancient continent, but it seems to have attacked those of the New World, where it is known as the Black Rot. M. Planchon, it should be stated, was one of the first to point out the identity of the European anthracosis with the Black Rot of America. There is another form of this disease which the Americans call the Grey Rot—a form of the malady which is at present unknown in Europe, but which seems to have caused more damage to American Vineyards even than its swarthy congener, as we know it in Europe; but, unlike the last-named disease, it only attacks the Grape after it has entered on the period of maturity—in other words, it seems to take up its work as soon as the Grape is no longer susceptible to the attacks of the Black Rot. The first traces of the Grey Rot is a small brown spot surmounted by a globule. This spot enlarges and spreads, and soon destroys the whole of the Grape—both pulp and seeds—by rotting it, and not by drying it up, as in the case of the Black Rot. The Vines attacked by the Grey Rot have outwardly no signs of weakness or disease, but they are suddenly attacked by this pest while they appear to be in the plenitude of their vigour, and that with such violence that the most promising Vineyards are totally destroyed in a few days. The Grey Rot generally makes its appearance after a succession of warm or damp weather, and ceases when these conditions become altered.

It is an interesting question as to whether the Grey Rot is a particular form of the Black Rot, or whether it is a special disease *per se*. This is a problem which can hardly be decided at present, for the Grey Rot does not seem as yet to have made its appearance in French Vineyards. M. Meissner, of St. Louis, Missouri, to whom we are indebted for the above particulars concerning the Grey Rot, states that having visited in September last the Vineyards of the Charentes, the Bordelais, Provence, Languedoc, the Côtes du Rhône, and du Beaujolais, he could perceive nothing throughout the whole of those districts which in any way resembled the Grey Rot of America, and he seems to think that, luckily for us, the French climate is not favourable to the development of this cryptogamic disease.

We insist upon these details because it is not true, as some of the detractors of the American Vines persist in repeating, that they have been the means of introducing into France this same disease of the Grey Rot which has committed such fearful ravages in the Transatlantic Vineyards. The Grey Rot appears to have been confounded with the Black Rot, the effects of which are perfectly distinct, inasmuch as the latter disorder attacks the whole of the Vine from the very earliest stages of its growth, while the ravages of the former are confined to the Grape which has reached or passed the ripening stage. The French Vine has already had quite enough to undergo from Oidium, Phylloxera, and anthracosis without its being accused of suffering from a disorder which, unlike those storms of which we have lately been the victims, appears to be as yet confined to the American Continent.—"Revue Horticole."

Preserved Rhubarb.—Persons who have a taste for Rhubarb or Pieplant are reminded by "The Western Rural" that the stalks may be pared, cut in pieces an inch long, and dried the same as Apples or Peaches, or stewed and canned like small fruits, thus affording an excellent relish out of season.

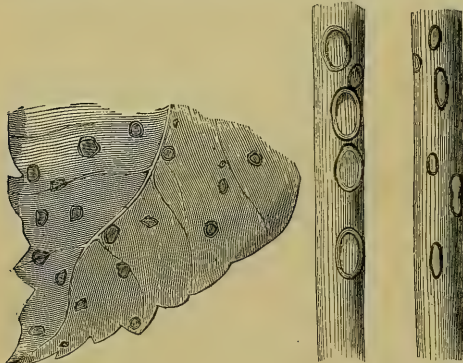


Fig. 1.—Portion of a Vine leaf attacked by the Black Rot.

Fig. 2.—Shoots of the Vine attacked by the same disease.

trained against a wall with an eastern aspect and protected at the top, but its yield was uninjured, and in no way suffered either in quantity or quality like that of preceding years.

M. Marès, whom we have already quoted, thinks that the mischief done by the Black Rot to the shoots, leaves, and fruit of the Vine is produced by unexpected changes of temperature, which coincide with the sudden appearance of rain, fog, or sunshine. The damage done, says M. Marès, has too much analogy with that produced by late white frosts for the cause not to be similar, and that the fungoid bodies found by several naturalists in the portions of the Vine injured by this disorder are not the primary cause of the evil in question, but nothing more than one of its consequences. An eminent cryptogamist, M. de Barry, a professor of the University of Strasburg, has lately made a discovery which seems to throw an entirely new light on this interesting question. M. de Barry has succeeded in inoculating the Vine with the Black Rot at will by means of the excessively small spores of this particular cryptogam—the *Sphaceloma ampelinum*. He collects these spores by means of a damped camel's-hair pencil, and places them with all the necessary precautions on the seed of a healthy Vine, and finds that after a few days the anthracotic spot begins to develop itself. "The experiment devised by M. de Barry," says M. Planchon, who has been good enough to communicate to us the article written by the learned Strasburg professor, "proves incontestably that it is produced by the cryptogam which has been named by this author *Sphaceloma ampelinum*. This discovery is of primary importance, because it gives an explanation of the reason for the necessity of the intervention of water, or at any rate of a certain amount of humidity

THE FLOWER GARDEN.

ROCK AND ALPINE PLANTS IN YORKSHIRE.

CHEIRANTHUS ALPINUS and *C. Marshalli* are now finely in flower, and have healthy foliage, while last spring we could scarcely grow them. Such little gems as *Cortusa Matthioli*, *Hutchinsia alpina*, *Arenaria cespitosa*, and *Veronica saxatilis* have continued a long time in bloom. *Erodium Reichardi* may not be a plant of the rarest description, but certainly it is one of the prettiest of rock plants; *E. Manescavi* is more straggling in habit, but an abundant bloomer. *Erinus hispanicus* is strong and well-bloomed, but *E. alpinus* was nearly lost during the winter, and that has been the case I find in several other gardens in this neighbourhood. *Genista prostrata* is growing and blooming well, the present humid weather seeming to suit it perfectly. *Papaver alpinum album* is a most graceful subject, and *Potentilla alpestris* is throwing out its prostrate bloom stems to an unusual distance, the tips becoming erect, and carrying beautifully-formed, soft, clear yellow flowers that last a long time in perfection. *Anemone sylvestris* has had a bad season, owing to the heavy rains which we have had, otherwise it would have done well. I never saw the dwarf *Phloxes* so good; even *P. Nelsoni*, which always before with me bloomed so indifferently, is now completely covered with flowers. Such quaint plants as the *Ajugas*, *Erigerons*, *Euphorbias*, and *Salvias* are perhaps more characteristic than pretty; still, there are many

gayer plants that could be better spared if need be. *Delphinium nudicaule* stands out richly with its singular-coloured flowers of orange-scarlet and dark, spare foliage. *Arenaria balcanica* is a good plant; it has glaucous foliage and large white flowers, possessing great substance. *Antennaria hyperborea* is densely bloomed, and, owing to its ashy-coloured foliage and lumpy pale

red flowers, it somewhat resembles a nearly-extinguished coal-fire. A small piece of *Dryas octopetala* is prettily in flower. *Iberis corniculata* is simply grand, masses of it being sheets of snowy whiteness. Irises of all kinds here are most sparing of bloom. *Myosotis rupicola* and *M. alpestris* are new members here, but so fine are they that they are sure to win more patronage. We cut our first low *Rose* outside (on south wall) on the 12th inst. *Linaria alpina* has come up strongly from seed which has been eighteen months in the ground. *Dicentra spectabilis* is very weak and poor. *Anthericum Liliastrium* (St. Bruno's Lily) in front of dwarf shrubs, in good bold clumps, looks most chaste. *Lewisia rediviva* (a small plant) is doing well here. *Aquilegias* have made rampant growth—4 ft.—and are well bloomed. The variegated-leaved *Veronica gentianoides* is most satisfactory, and, what is not usual with variegated species, it carries finer flowers than the type.

Woodville, Kirkstall.

JOHN WOOD.

MOSAICULTURE.

WHETHER the particular style of gardening known to the French as mosaiculture and to us as carpet gardening is in accordance with good taste or not we will not now stop to enquire; that the system exists and is fashionable is sufficient for our present purpose. In order to practise it in perfection the laws of form and colour must be studied. Amongst the most successful cultivators of the art in France is M. Comesse, and those who had the good fortune to visit

the gardens of the French International Exhibition held last year had ample opportunities of seeing numerous specimens of his work. In a late number of the "Revue Horticole" was published a bed of this kind, contributed by M. Comesse, which we reproduce below, along with the list of plants with which it is to be filled, their places in the figure being indicated by numbers: No. 1, a Palm; 2, a group of Begonias; 3, *Coleus niger*; 4, *Lobelia compacta*; 5, *Fuchsia aureum*; 6, *Alternanthera versicolor*; 7, *Alternanthera amabilis*; 8, *Alternanthera amena*; 9, *Sedum saxangulare spirale*; 10, *Crassula Cooperi*; 11, *Echeveria pachyphyllum*; 12, *Kleinia repens*; 13, *Crassula Bollei*; 14, *Yucca quadricolor*; 15, *Mesembryanthemum cordifolium*; 16, *Echeveria glauca metallica elegans*; 17, *Antennaria tomentosa* or *Sedum glaucum repens*; 18, *Echeveria secunda glauca*; 19, *Alternanthera paronychioides*. These may, of course, be varied at will, either by a complete change of colour, and even of size, or the size and colour may be adhered to although the plants themselves may be changed.

C. W. Q.

A ROCK GARDEN IN KENT.

As a pendant to the interesting description of the far-famed Alpine garden of the Messrs. Backhouse, at York, I should like to give one of a garden in the other extremity of the island. I know, I am glad to say, that described by your correspondent, and I think it quite impossible to exaggerate its beauty or importance. Anything

more natural than the arrangement, or more varied than the plants cannot be imagined. Its accomplished owner has, of course, unusual facilities. He has, independently of any commercial interest in his plants, a real hearty love for them; is an excellent botanist, and, with his correspondents in all parts of the world, he can bring together the various treasures which he receives from them. The result of



Mosaic Bed. Designed by M. Comesse.

all this is an Alpine garden which, as far as I know, is unequalled for beauty and extent; and every lover of hardy plants who has seen it will ever regard the first time that he did so as a day to be indeed "marked with white chalk." The garden which I am about to notice is of a different character. It is that of an amateur; it does not equal in extent or variety that of Messrs. Backhouse, yet, as an example of tasteful arrangement and successful culture, it is one well worthy of notice, and amply repays the visitor who may be induced to go there.

St. Alban's Court, the residence of Mr. W. O. Hammond, is situated about three miles from the Adisham station of the London, Chatham, and Dover Railway, close to the village of Nonington, and about nine miles from Canterbury and Dover, and is one of a cluster of gentlemen's seats which combine to make that nook of Kent very lovely. It closely adjoins Fredville, the seat of Mr. Plumtre, and Goodneston Park, that of Sir Brook Bridges—parks which are noted for their fine timber, especially Oaks, the Fredville Oak being noted as one of the oldest and largest Oaks in England. The house is entirely new—indeed, barely finished—and is one of the very best examples of Tudor architecture. The admirable taste of its owner has led him to keep free of all absurdities, such as are too often found in modern copies of those days, and every portion of it has been the result of careful study and personal superintendence. It is somewhat elevated, the terraces are now being finished, and will quite correspond with the building. They lead down to a well-kept lawn, in which is a parterre, on which the eye will rest with pleasure, the walled-in garden and shrubberies being out of

sight on the left; but the fine wood of the park shows well from the house and terraces. At the back of the shrubberies, and close to the garden, was a deep pit in which shrubs would not thrive, and so, by a happy thought, the owner determined to convert it into a rock garden. But there were no rocks in the neighbourhood, and so here is another instance, like that at York, where all the necessities for forming the garden had to be brought from a distance—in this case, I believe, from Tunbridge Wells, some thirty or forty miles off. The garden is in the form of a semicircle; the rocks gradually rise from the bottom around the sides of the amphitheatre, which I should imagine, although I did not measure it, would rise up some 20 ft., and is some 30 yards or 40 yards across, giving ample space, as may be supposed, for a large variety of plants, which are carefully planted according to their several wants. At the period of my visit (June 4) some of the earlier spring flowers were over, and some of the later ones were not in flower; but there were many of great interest. *Gentiana verna* was one, and had evidently been flowering well in different parts of the rockery and had established itself completely. *Lychnis Galascea*, with its deep rose coloured flowers, and *Lithospermum Gastoni*, of an intense blue; *Potentilla rupestris*, with white flowers; *Arenaria purpurascens*, with its purple flowers, were in good condition; *Silene acaulis* had established itself most completely, and its dense cushions of bright green were a picture in themselves, recalling my first sight of them on the Col du Balme, in Switzerland. *Ranondia pyrenaica* was just coming into bloom, but a sad calamity had occurred in connection with this lovely plant. There was, when I saw the garden last year, a very large number of it in various parts of the rockery, but during last winter the mice attacked it, first carrying away the leaves and then eating the roots themselves. The place it especially delights in is a narrow fissure between two rocks, where it receives no sun, but where its broad, leathery leaves cleave to the surface of the rock, and its lovely mauve coloured flowers throw themselves up in great profusion. This colour is, I think, unique in herbaceous plants.

Of the *Androsaces*, *A. carnea* was over and *A. lanuginosa* just coming into bloom, but *A. villosa* was especially beautiful with its soft silky foliage and white flowers with yellow eye. The white *Ranunculus amplexicaulis* and the pale sulphur *Meconopsis nepalensis* were flourishing, while *Mazus Pumilio* was forming a dense carpet, from which its pale violet flowers will come up in great profusion. There was a large variety of the *Saxifragas*, *Sedums*, and *Sempervivums*; amongst them a variety of *arachnoideum*, with a good deal of red on the rosettes, was very good and robust. *Saxifraga coriophylla*, *longifolia vera*, *Burseriana*, and others were fine. *Daphne Cneorum*, *Linaria prostrata*, *Primula Monroi*, *Astragalus monspessulanus*, *Sisyrinchium aneupis*, *Anemone narcissiflora*, are doing well; but, in general, Mr. Hammond has not been successful with *Primulas* nor with his bog plants, although he has made an artificial bog, which it would seem ought to grow them; but the *Pinguiculas* were not thriving and the *Droseras* had perished. *Cypripedium spectabile* was growing very strong, and some of our British Orchids were also doing well. The lovely little *Myosotis rupicola*, with its intense bright blue flowers nestling down on its dwarf foliage, was so beautiful that it may well console growers of herbaceous plants for the impossibility of growing the lovely little *Erichium* named in the garden. This latter is one of those difficult plants over which a grower may break his heart. Mr. Backhouse told me some years ago that he had spent £100 in trying to introduce it, but had failed. Mr. Elwes also informed me that he had tried it and sent some fine plants to Mr. Atkins, of Painswick; he had himself lost it after one season, and Mr. Atkins had managed to keep it alive for two, and then it had died; while Mr. Hammond had equally to record its failure with him. The lovely *Iberis jucunda* was in good condition, but Mr. Hammond has the same fault to find with it that I have noticed—that so many of the plants lose their leaves and then seem to perish. However, it seeds so readily, and the seeds germinate so freely, that it is very easy to replace the plants when they become shabby. Various kinds of *Lilies* were doing well, and promised for a fine bloom, the early flowering kinds being already expanded. *Omphalodes Lucilæ* was also in excellent condition, and is certainly an extremely interesting plant, and one that should be included in every collection.

I have only indicated a few out of the many plants that are cultivated in this rock garden—a garden which is certainly calculated to stir up a love for Alpine flowers in those who visit it, and to encourage those growers who have already essayed their cultivation; although to those who, like myself, can only indulge in a very small affair, it makes one feel somewhat humble. However, we cannot go beyond our capabilities of space or pocket, and so must rest content. I think I may say for its owner that he will gladly welcome any one who, possessed with the same taste, would desire to see his garden.

DELTA.

A BUTTERPOT BOUQUET.

IN the Academy exhibition last year was a pretty flower picture showing the use that may be made of a Dutch butterpot. It was one of the many good flower pictures painted by Miss Mutrie, who is a bright exception to artists who take this line, and who, generally speaking, conspicuously fail. The finest flower picture I can call to mind if one by Mignon, in the gallery at Amsterdam. It is a group of huge *Pæonies*, *Roses*, and other large flowers confusedly heaped up in a vase. The charm of that picture is to be found in the fact that the painted flowers are like real flowers, and give delight to the beholder. The average of flower pictures are like bits cut out of wall papers much more than like living flowers, and give pain rather than pleasure to the eye that is accustomed to note the characteristics of the reality. Miss Mutrie's picture reminded me of that of Mignon, and both reminded me that I had in my museum a fine old Dutch butterpot of a hard slaty grey colour with an uncouth pattern of blue and white stars on each side. I brought it out, and I crammed it with *Tulips*, *Pæonies*, flowers of *Seakale*, sprays of *Berberis*, *Trumpet Lilies*, *Asparagus*, the leaves of purple *Beech*, and many more such things as might by some be accounted coarse, and in about ten minutes I had a truly gorgeous butterpot bouquet. For a week it stood on the sideboard and defied the critics. Then I cleared it out and filled it with flower spikes and leaves of scarlet *Chestnut*, purple and white *Lilac*, *Flower Thorn*, *Trumpet Lilies*, double *Tulips*, and smaller oddments, and again it carried on the defiant trade, and misanthropes who witnessed its splendour instantly loved each other and all mankind. I advise all and sundry who possess Dutch butterpots to bring them out while there are many showy subjects in flower, and there is perhaps a new delight in store for them. The spread of the huge bouquet should be 18 in. or 20 in. over, and the whole should be as rich and full as flowers and leaves can make it, with bits of light spray peeping out to tone it down and prevent suspicion of vulgarity. The white flowers of the *Seakale* are invaluable for the purpose if they are properly wedged in between fiery *Pæonies* and *Tulips*, and there is scarcely a flower in the garden but may be pressed into the service to assist in the composition.—S. H., in "Gardeners Magazine."

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Orchis foliosa.—This handsome terrestrial Orchid is one of the finest of the hardy kinds which thrive in our climate. It grows from 1 ft. to 2 ft. or more in height, and produces long dense spikes of rosy-purple blossoms, spotted with a darker hue. It begins to flower about the middle of May, and continues in full beauty for a considerable time. In the outdoor garden it delights in moist sheltered nooks at the base of the rock garden, or in some similar place, and it should be planted in deep, light soil. It is also perfectly amenable to pot culture, for which, on account of its neat habit, it is peculiarly well adapted, and it associates charmingly with other subjects used for greenhouse decoration. For this purpose the plants should be grown in a cool, airy frame, potted in fibry loam enriched with decayed manure, and when about to flower removed to the greenhouse, where for several weeks they will be a source of great attraction. It is also an effective exhibition plant, and, when well grown, such as we saw it a few days ago in Mr. Williams' nursery, at Holloway, it is scarcely inferior to some of its more showy epiphytic congeners from the Tropics. It is a native of Madeira, and has been introduced for some considerable time.—W. G.

Cypripedium Calceolus and C. spectabile.—We grow these here in large quantities in borders, where a little shade can be had. I used to adopt the water system with bad effects, but since I made a lucky find my compost has simply been peat mixed with small limestone shingle. In this the growth is astonishing, and some of the clumps of *C. Calceolus* bear some fifty blooms, all two on a spike, while *spectabile* nearly grows to 3 ft., often with three blooms. It is not generally known that *C. Calceolus* grows wild on the estate here, and not 100 miles from Kendal. I say wild, as it is spread over some considerable extent, and in two places. For many years past I have made it a practice at a particular day to have all the flowers pulled off so that it may escape the notice of plant collectors, who swarm in this neighbourhood, and whose finding of any rare plant or species surely leads to its extermination.—R. CRAIG, *Levens Hall, Mithlthorpe*, in "Gardeners Chronicle." [Mr. Craig, we fear, tells too much.]

New Plant Disease.—M. Max Cornu has detected a new malady which attacks plants of the Order *Rubiaceæ* grown in hot-houses. It appears that an *Anguillula* deposits its eggs in the roots, these swell and decay, the plant perishing rapidly. Precipitate sulphur has been recommended as an effective remedy.—"Athenæum."

The Wild Bluebell (*Scilla nutans*).—I was glad to see this charming native plant favourably noticed in *THE GARDEN* (p. 47), and have in some measure been anticipated in the remarks I had intended to make in reference to it. The "shade-loving Hyacinth," as I have heard it described, is at this moment the glory of our northern woods, and in one open plantation close to where I am writing may be seen perhaps twenty acres literally blue with it. It is seen to most advantage growing amongst Bracken (*Pteris aquilina*); the latter, where not too rank, with its feathery green, adds a charm to the otherwise monotonous acres of blue. White and flesh colours may also be found by those who choose to seek for them. No shade is too great for this plant. It will grow under the densest masses of Holly, and even under the Beech right up to the bole. The Spanish Squill (*S. campanulata*) is, as regards size, superior to the common *S. nutans*, and may be as easily naturalised. Some of the forms of *S. campanulata* are little inferior to the cultivated or Dutch Hyacinth, and far handsomer than what is known as the Roman Hyacinth (*Scilla romana*). Modern botanists have given our native Bluebell the name of "Endymion;" the old name of "non-scriptus" seems to be discarded. One of the family—a gem—*Scilla amethystina*, is now very pretty with me on rockwork.—THOS. WILLIAMS, Ormskirck.

A Little Sketch at Longleat.—The accompanying illustration shows the effect of certain very common native plants in landscape gardening. It is a little sketch, by Mr. Alfred Parsons,



Giant Burdock and Double Furze on margin of water at Longleat.

of a water margin at Longleat, where the giant Burdock is associated with double Furze—an odd combination, which struck us as very beautiful when the Furze was in flower. It is another proof, if one were wanted, of what good effects may be obtained in gardens by the use of the simplest materials.

Aerides Schroederi and other Orchids.—A fine example of this rare Orchid is now in flower in Mr. Philbrick's collection, in the Avenue Road, Regent's Park. It somewhat resembles the better known *A. maculosum*, but is much superior, as the blossoms are larger and the colours more clearly defined. The Cattleya house in the same garden is now also very gay with a choice assortment of the finest kinds, among which the several varieties of *C. Mossie* are very attractive; also the shy-flowering *C. lobata*, a lovely species. *Cypripedium Stonei*, *Epidendrum vitellinum majus*, and the various beautiful forms of *Odontoglossum citreumum*, one of the best of cool house Orchids are likewise finely in bloom. On *Sobralia macrantha* we noticed several expanded blossoms, gorgeous, though fugitive. Among the Masdevallias was the curious *M. Peristeria*, the strongly-coloured blossoms of which have a purple oscillating lip, which, with the other parts, resembles a bird in miniature.

Iberis gibraltarrica.—This has again proved itself quite hardy, having passed through the severe winter with very little loss at Didsbury. We have a large quantity of it planted out on rockwork and on sheltered borders, and it is by far the most beautiful of the herbaceous Candytufts. It is readily increased by cuttings, and two lots of these have withstood the frosts with no other protection than that of a cloche. *Iberis superba* flowers a fortnight earlier than *I. corneifolia*, and is different also in its leaf, which is longer and narrower. After being some time in flower it becomes very pink, which mars its

effect when massed. *I. corneifolia* has not this fault, and, of the two, is the finer plant. A large mass of it is exceedingly beautiful, and it continues a long time in flower.—BROCKHURST.

Tender Annuals and Slugs.—In the planting out of all kinds of tender annuals, the greatest possible difficulty is experienced in saving them from slugs this year. Never before have these pests been so abundant. In the evening the soil is literally covered with them, and they fasten upon tender plants by dozens, and sweep them off wholesale in a single night. In putting out such tender plants as Balsams, Asters, Marigolds, Stocks, &c., fresh from the frame, the most disheartening results follow, as, in spite of all precautions, they require to be replaced again and again. Lime as we may (and nothing is more efficacious than dustings of fresh-slacked lime and new soot early in the evening, just as the slugs are first out for their night's meal), these dressings are constantly neutralised by the regular heavy rains which we are now experiencing, and thus the work of keeping the slugs in check becomes one of enormous difficulty. The hard winter, so far from killing such pests, doubtless had the effect of sending them deeper into the earth out of harm's way, whilst the long continued moist weather we have had enables them to breed by myriads long after the time when hot dry weather has generally sent them deeper into the soil in search of moisture. I find that slugs avoid *Lobelia*, *Nasturtium*, *Antirrhinum*, *Pentstemon*, and a few other plants that have a strong astringent taste. It is a good plan, as tending to harden the plants before the final planting, to get them out of the seed-bed, and lay them in in rows for a week or so; they are then less succulent and less liked by the slugs.—A. D.

Violas and Pansies.—It would be well if some acknowledged authority would lay down a rule defining exactly what is a *Viola*. At the late Manchester Show Mr. Hooper's prize lot contained several Pansies classed as *Violas*. I understand that Mr. Hooper considers that there is no rule, but if we are to have prizes for *Violas* the judges should certainly disqualify exhibits containing Pansies. The only marked difference which could be insisted upon as marking the *Viola* is, I consider, the eye. A true *Viola* should have a small clear eye; anything with strongly marked lines diverging from the yellow centre becomes a *Pansy*. *Violas* are coming more and more into use for bedding purposes, and I believe that next year will bring some very choice sorts before us so, we ought to have the point clearly defined.—BROCKHURST.

—Last summer I endeavoured to point out the pedigree of both Pansies and *Violas*, tracing the latter to *cornuta* and *lutea*. Enchantress and Perfection still point to *cornuta* and *lutea*, and Golden Gem to our native *lutea*, but such *Violas* as Chieftain, Tory, and Holyrood are Pansies to all intents and purposes, having evidently been bred from the cultivated *Pansy V. tricolor*. Can any of the readers of *THE GARDEN* help us in this matter? Correctly speaking, they are all *Violas*, and it may be pointed out that the so-called *Violas* are continuous bloomers, but as to distinction, as regards exhibition, a *Pansy* may become a *Viola* and a *Viola* a *Pansy*.—T. WILLIAMS.

The Woodruff (*Asperula odorata*).—This is largely used in Germany for flavouring summer drinks. "Mai-Wein" is easily concocted, and furnishes a most delicious beverage at garden parties. Take a handful of Woodruff flowers, cut off short, put them in a bowl, sprinkle them with two table-spoonfuls of white powdered sugar; pour over them a bottle of light hock and leave it for ten minutes; then pour off the wine, carefully straining out the leaves, and let it stand till required, in ice if practicable; then add, if wanted light, two bottles of soda water, or if wanted very good, one bottle of sweet champagne and one bottle of soda water.—BROCKHURST.

Narcissus Bulbocodium.—I am happy to report the perfect success which has rewarded me in raising this charming *Daffodil* from seed. Imported bulbs I have found to flower well in the open border the first year, but after that they generally disappear, or at least never flower again. Three years ago I planted out a box of seedlings, which flowered freely in the spring of 1878, and, having stood last winter without protection, have again flowered this spring. I am well pleased at this result, for the Hoop-pettcoat *Daffodil* is one of the choicest of its kind. *Narcissus juncifolius* is a distinct late flowering kind that is worth having.—SALMONTEES.

Wintering Gladioli Out-of-doors.—Bulbs of these left in the ground through the winter are now shooting up strongly. They were only protected by a mulching of half-decayed leaves about 2 in. in thickness, some of them being delicate kinds. The soil is light, sharp loam, naturally drained. Other kinds, such as *Brenchleyensis* growing in a wetter soil, and to which no mulching was given, are growing equally well, facts which, after such a long trying winter and late spring, surely speak much in favour of Gladioli being harder than most people give them credit for.—W. DIVERS, Wierton, near Maidstone.

HEATING BY HOT WATER.

THE scientific principles on which the action of a hot-water apparatus depends are now so perfectly ascertained, and permit of such easy adaptation to every kind of circumstance, that no one need be deterred by any fear of disappointment from adopting this system of warming. More than one-half of the hot-water pipes manufactured in Great Britain are used in the warming of horticultural buildings. In fig. 1, A represents the boiler, and B C D a line of pipe. So long as the fire is out, and the water in the whole apparatus equally cold throughout, there is no motion, because the column of water in C counterbalances that in A. And the same state of rest would obtain after the fire was lighted if the water in every part could be maintained at the same temperature, and consequently at the same specific gravity. But that is impossible, inasmuch as the material of which the pipes consists abstracts the heat from the water, and parts with it to the surrounding air. Heat makes water expand, and diminishes its weight in a corresponding degree; iron pipes cool hot water flowing through them, and increase the weight of their fluid contents accordingly; the result is, that the column C is always heavier, bulk for bulk, than the column A. This causes a constant circulation of the water in the direction of the arrows, its rate being proportional to the difference of temperature between C and A. There are two systems of heating by hot-water—the high pressure and the low pressure systems. In the former the apparatus and pipes are hermetically sealed, and the temperature rises to 350°, and sometimes higher; with the latter system there is always an open communication between the water and the atmosphere, so that the water cannot rise above 212° in the hottest part. The high pressure system, in virtue of the greater heat imparted to the pipes, allows of a much smaller pipe being used, but the heat is so considerable, and practically so much beyond control, to say nothing of the risk of an accident from explosion, that this method is by no means so suitable for horticultural work as the other.

Quantity of Pipe.

A square foot of glass will in one minute cool down to the temperature outside $1\frac{1}{2}$ cubic ft. of the air inside the house. It is evident, therefore, that as much heat as the glass walls and roof can pass away to the air outside in a minute is the quantity that must be supplied by the pipes in that time. The prevalence of high winds undoubtedly tends to an increased loss of heat, but the cooling effect of wind cannot be measured by its temperature; its velocity must also be considered. Wind travelling at the rate of 30 miles an hour cools the air of a glass house as rapidly as a still atmosphere registering 25° lower on the thermometer. The first thing to do, therefore, is to measure up the area of glass. If the frame is of wood deduct one-eighth from the total surface; but if of iron make no deduction, inasmuch as iron sash-bars allow of the escape of heat as readily as glass itself. The following table shows how many feet of 4-in. iron piping maintained at a temperature of 180°—the average temperature of a low pressure apparatus—will suffice to raise 1000 cubic ft. of air in a minute from the temperature obtaining outside to that required in the building:—

Actual or virtual temperature.	Temperature required inside.							
	45°	50°	55°	60°	65°	70°	75°	80°
10°	144	135	205	235	270	300	350	400
15°	135	155	180	212	245	285	325	375
20°	105	135	160	190	221	257	295	335
25°	85	110	137	165	196	225	260	310
30°	65	87	110	140	175	206	230	285
35°	45	65	90	120	148	185	215	260
40°	25	45	70	95	125	160	190	230
45°		25	45	75	100	130	165	200
50°			25	65	75	105	130	170

Now, for instance, it is desired to find out how much pipe will be required for a house, the glass area of which is 800 square ft., exclusive of wood sash-bars, that has to be maintained at a temperature of 60° when the lowest temperature outside is, allowing for the effect of winds, 10°. 800 square ft. of glass will cool 1000 cubic ft. of air from the temperature inside to that ruling outside, viz. 10°. In the table, on referring to the column headed 60°, and opposite 10°, is the number 235, which is the quantity of pipe, of 4 in. diameter, that will give off as much heat in a minute as the glass will waste. The size of the building, i.e., its cubical contents, does not affect the question; it is the glass alone which gives off any appreciable heat, and therefore whatever quantity of pipe will compensate for this loss of heat by the glass will also warm the house, in the first instance, and maintain it at the required temperature afterwards, because until the air is heated to its maximum the glass will cool proportionately less air, the cooling power of the glass being obviously exactly proportional to the difference between the external and internal temperatures. The pipe, therefore, gives off at first more heat than the glass wastes, until at last the point is reached when the two are

just balanced, and that balance is the temperature which is wanted in the house. The best size of pipe for general use is 4-in., but sometimes smaller are required for the sake of convenience. If 2-in. are used twice as much will be wanted as if 4-in. had been put down, and one-third more if 3-in. are used. Small pipes heat more rapidly than large ones, but they also cool much more rapidly. For connecting houses with each other, or with a boiler house in a central position, 2-in. pipes will suffice; they must, however, be placed in a trench filled with sawdust to prevent loss of heat.

The ventilation of horticultural buildings deserves very careful attention. Plants have two sources of food—the soil in which they grow and the air they breathe. Motion and consequent change exist in every climate, and cannot be entirely withheld from plant houses without a corresponding loss of vigour and compact growth. The advantages to vegetation of brisk motion in the air are, therefore, obvious. Suppose that an opening is made in a hothouse wall at the floor-level, and another in the opposite wall at the top; a current of air will enter at the bottom, and passing in a straight line to the top opening, escape thereat, the rate at which it travels being proportionate to the difference in temperature of the outside and inside atmospheres. To secure an even distribution of ventilating effect throughout the house, the ventilating inlets and exits must be set at regular distances, and the total area of the inlets should be more than that of the exits to prevent back-draught. In summer it is always more difficult to secure ventilation than in winter, because of the smaller difference between the two temperatures, that of the outer air, on the one hand, and that of the inside air on the other. It will be necessary, therefore, to take as a basis for calculation the temperatures obtaining in the hottest weather, and the ventilators must be sliding so that the opening can be contracted as may be necessary on the approach of colder weather. The inlets must always open upon, behind, or under the heating pipes, whether the latter are on the floor or in trenches covered with iron trellis-work. By this arrangement the air will be warmed as it enters the house.

The following table shows the quantity of air that travels through a pair of ventilators per minute, the area of each being 1 square foot:—

Height of exit above inlet in feet.	Excess of Inside Temperature over Outside.				
	10°	15°	20°	25°	30°
15	200	245	290	320	350
20	230	285	330	370	400
25	260	320	370	410	450
30	290	350	400	450	500

For instance, if the exit ventilators are 20 ft. above the inlets, and each set of an aggregate area of 6 ft., there will be a volume of 1980 cubic feet of air passing through the house in a minute when the temperature of the latter is maintained at 20° over that of the air outside, and these 1980 cubic feet must be added to the quantity of air cooled per minute by the glass, walls, and roof in calculating the quantity of pipe required to warm the house when ventilated.

There are many ways of securing bottom-heat. Pipes (two of 4 in. diameter for a bed 6 ft. wide) surrounded with large stones are sometimes used for that purpose. Many use tanks for this purpose. These are made of 1½-in. deals, grooved and tongued, and

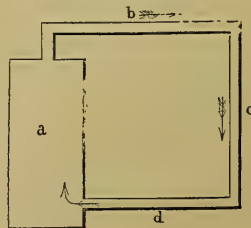


Fig. 1.—Section of Boiler and Pipe.

secured by ties of iron rod, the joints being made tight with white lead or by brickwork cemented inside, and covered with thin slates. A division is run along the centre to nearly the extreme end of the tank, so as to make the hot water flow its whole length before it returns. The flow and return pipes, instead of being only connected with the tank, as they would be in the case just mentioned, are sometimes carried right through it. Pipes carried up from the tank pass through the beds and give moisture to the air when required, and a tap fixed in the tank allows of the water to be drawn off at will.

The ordinary plan of moistening the air is by means of troughs and shallow pans, preferably made loose and of tinned sheet iron, with a shallow bottom to fit the curvature of the pipe. The best position for evaporating pans is in the direct line of the ventilating inlet, many cultivators making their houses too hot and too moist. It is quite true that heat expedites the growth of a plant, and that moisture is essential to its existence, but heat and moisture are not everything. A sufficient temperature during the day, and as much humidity as will suffice to prevent any chance of the natural moisture of the plant being dried out of it, coupled with a plentiful supply of air, make the balance of maturing agencies to be aimed at, and at night plants require rest. To stimulate them then by keeping the house unnecessarily warm results in weak growth.

Boilers.

Taking everything into consideration, there is no pattern boiler which presents so many advantages as the saddle. Large numbers of boilers requiring no brickwork setting are now sold, and one variety of these—the upright—allows the fire to be easily banked up for the night without necessitating a boiler unnecessarily large. A perfect boiler is one that presents a maximum surface to the direct action of the fire, possesses a large and free water way, and has as few angles as possible. Wrought-iron boilers rust more readily than cast-iron ones, but they are much less liable to be cracked by careless stoking. Water can absorb heat from an iron plate two and a-half times as fast as the iron plate can receive it from the fire. This being the case, it is very evident that a boiler of any given length or size will have its heating power considerably increased if

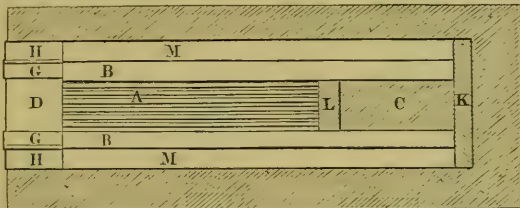


Fig. 2.—Horizontal Section of Boiler.

currents from the top one. K k are two fire brick lumps with an opening between them of about 4 in. (more or less according to the size of the boiler). When the boiler is made with a terminal end or with a waterway check-draft, both or only one of these lumps is dispensed with. Fixed as shown, they exert a reverberatory effect. When the boiler is more than 6 ft. long, the bottom lump is omitted and one L fixed inside the boiler, leaving a space of about 6 in. in depth between its top and the boiler crown. The side flues M m are 4½ in. wide and the full depth of the boiler. The arrows indicate the direction of the draught. Every square inch of boiler surface is thus used to the best effect. N is a damper fixed in the chimney at a convenient height.

Coke and coal in equal proportions, or coke and spent tan make excellent fuels. The perfect combustion of fuel is a point of the greatest importance. It can be effected only by the supply of the necessary amount of oxygen, at the temperature of the furnace fire, to the place of combustion. There are three methods of doing this,

none perfectly successful in all cases, but either better than nothing. First—a judicious use of the dead plate with a ventilator in the fire door. Each fresh charge of fuel is placed on to the dead plate and there baked or coked. The more volatile constituents, accompanied by a quota of air passing through the ventilator in the furnace door, pass on to the scene of combustion, and, attaining the proper temperature, burst into flame before they reach the flues, whereas if the fuel had been thrown direct on the fire, or if the supply of air through the fire door had been allowed to reach the place of combustion at too low a temperature, the volatile gases of the fuel would have escaped as dark smoke, or as colourless and half-burnt carbon (carbonic oxide) into the flues. Another plan is to lay pipes in the flues, so as to receive air from the outside and deliver it behind the bridge. Provided that the supply be sufficient in quantity, and the position of the pipes in the flues such that the air passing through them is raised to the proper temperature, there is not much chance of any unburnt gas getting into the chimney. A third plan is to carry an iron pipe along the inside crown of the boiler, one end screwed into the boiler and the other terminating in a rose or spreader. The pipe, being small, carries only as much water as the heat of the fire suffices to burn into steam. This is expelled with considerable force

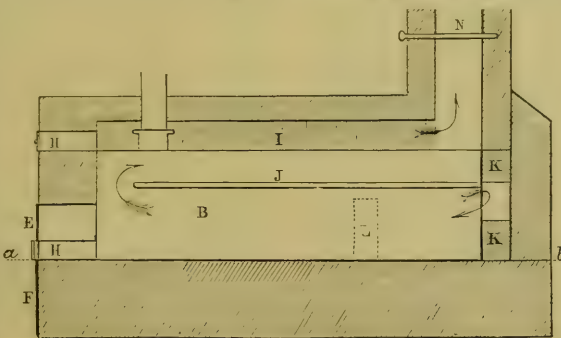


Fig. 3.—Vertical Section of Boiler.

small ones; for instance, one 6-ft. saddle boiler will heat as much pipe as two 3-ft. boilers of the same pattern with less fuel. The proper proportion of fire-grate surface is 4 square in. to 80 ft. of 4-in. pipe. Many good boilers are spoiled by bad setting. The annexed sketches show the best method of fixing a saddle boiler.

Fig. 2 is a plan at the line a b on fig. 3, which is a side elevation. After building up the foundation to the proper height, the bars A, supported on two bearers, are placed flush with the face of the boiler B, and with their upper surface on a level with the bottom of the boiler. The remainder of the furnace bottom C is made up of brickwork. In front of the bars and on the same level is fixed the dead plate D, a plain iron plate, 9 in. wide, and in length equal to the width of the boiler. In front of the dead plate comes the fire door E, and beneath it the ashpit door F. G c are short pipes with flange covers communicating with the boiler for the purpose of cleaning it out. To one of the covers can be attached a draw-off tap for emptying the apparatus of water. H h h are three fire doors, one for cleaning out the top flues, and one for each of the side flues. I is a ridge of brickwork supporting the arch; J, a stout cast-iron web, one at each side, supported by being built into the side-work, to divide the side

among the highly-heated gases, and, in virtue of the oxygen it contains, expedites combustion. For a small apparatus, gas or petroleum can be used—of course, not without a flue to carry off the products of combustion. None but clean water should be used with a hot-water apparatus, and, when possible, soft in preference to hard. Where the former cannot be had, the addition of sal-ammoniac in powder prevents the deposition of the salts of lime held in solution by the water. The supply cistern is to be fixed with its bottom not lower than the highest part of the apparatus. In size it should be capable of holding one-thirtieth of the whole water-contents of the boiler and pipes, this being the quantity which will return to it when the whole liquid mass is expanded by heat. A hundred feet of 4-in. pipe contain 54½ gallons.

Joints and Air-pipes.

The old-fashioned iron-rust cement is falling into disuse. It is undoubtedly very strong—in fact, unnecessarily so except for the boiler-socket joints. The socket, after receiving the spigot pipe, is first caulked with loosely-spun yarn, and the cement, made of 10 lb. of sifted iron borings with 2 oz. of sal-ammoniac in powder, and moistened with water, carefully driven in till the socket is full. The iron cement is now advantageously replaced by one of red and white lead. Joints made with india-rubber are very convenient. They

are easily fixed, allow of additions or removal with a minimum of trouble, and provide for the expansion and contraction of a length of pipe as the heat rises and falls. This expansion is small, but irresistible. Where cement joints are used, short pieces of round iron, placed under the pipes, allow them to expand and contract without any chance of danger from fracture. Wherever, as at dips and returns, air is likely to collect in a system of pipes, taps or pipes must be fixed to permit of its escape. The latter, carried up above the water-level, are the best because they require no attention. The flow pipe or pipes should always be taken, as far as practicable, directly to the highest level of the circulation. For, if two circulations, at different levels, are worked from the same boiler, the one at the higher level is apt to monopolise the supply of hot water. When, however, the two levels branch off from one upright pipe, the introduction of a knee just above the lower branch will secure something like a fair division of hot water. The distance between the horizontal flow and return pipe at their points of junction with the boiler should be 12 in. at least. This will secure a good circulation with a long length of pipe, but where there are dips the depth of these must be added to the 12 in., or the circulation of the water will be very slow. A small frame contiguous to the house can be warmed by a boiler fixed at the back of an ordinary sitting-room fire-grate. In fact, such are the capabilities of the system of heating by hot water, and so easily does it adapt itself to a variety of circumstances, that there are, doubtless, nooks and corners around or about the majority of houses which could, by a moderate outlay on the part of a judicious cultivator, be made to produce; *pro rata*, results equal to those obtained from extensive hot-houses.

CHAS. S. WOODROFFE.

NOTES OF THE WEEK.

Eremurus robustus.—M. A. Lavallée, the President of the Central Horticultural Society of France, has very kindly sent us specimens of this giant herbaceous plant, which is a native of Turkestan. It was sent to him three years ago by a Russian friend, and M. Lavallée believes it to have been the first time the plant has flowered in France. The flower-spike he sends us is a huge one, measuring considerably more than 7 ft. in height. He has two other stems larger still, measuring not less than 10 ft. in height. It flowers somewhat after the fashion of the old white Asphodel, the blossoms being of a transparent white colour, with green stripes outside, and bold orange stamens, the colour of which is seen through the buds before they open. The plant is perfectly hardy, and though liking deep loamy soil, does very well in a sandy one. We are very glad to notice that M. Lavallée, who has hitherto done so much for trees and shrubs, is now adding to our treasures of hardy herbaceous plants.

New Pelargoniums.—The nurseries of Messrs. F. & A. Smith at West Dulwich are now well worth a visit in order to see the Pelargoniums alone, which are, of course, as they have been for a long time, the leading feature in Messrs. Smith's establishment. The novelties that have been sent out within the past few years from this nursery are characterised by their early and free-flowering properties, combined with fine form and rich variety in colour. Their habit, too, is dwarf and sturdy. The new kinds to be sent out during the present year are very fine indeed, and show a marked advance on older sorts.

Ageratum Cannell's Dwarf.—Amongst the numerous novelties to be seen at Mr. Cannell's nursery, Swanley, few attract more attention than this exquisite little bedding plant, which is unquestionably the most desirable of its class yet brought out. It does not exceed 6 in. in height, and assumes a broad, flat head profusely studded with large clusters of bright lavender-coloured flowers. For bedding purposes, especially for carpet bedding, it is a decided acquisition, and has the additional property of producing a continuous succession of flowers till late in the autumn.

Iris Telford.—Under this name Mr. Osborn sends us a superb, large and fragrant Iris, resembling at first sight the German Iris, but much larger, and with a well-marked though delicate odour. It is a valuable plant, which should not be lost sight of by all who are interested in the bolder kinds of hardy flowers. The Fulham Nurseries in old times ranked amongst the most famous for hardy plants, and we are pleased to notice that the present Mr. Osborn does not intend to let their interest in that way diminish.

Agapanthus umbellatus candidus.—This is a desirable variety of an old favourite, and quite an acquisition, its large umbels of pure white blossoms being very effective, especially when grouped with other plants in a greenhouse. Thus situated, we saw it a few days ago in Mr. Bull's nursery at Chelsea.

Asparagus plumosus.—We lately saw some fine examples of this elegant Cape climbing plant in Messrs. F. and A. Smith's nursery at West Dulwich, and we were much struck with its light, graceful appearance. Its stems are slender and twining in habit, and the small, needle-like leaves are produced on slender twigs, which form a flat expansion of triangular outline. For training up the rafters of a greenhouse, or even for pot culture, this *Asparagus* is an invaluable decorative plant, and one that is likely to prove useful for cutting purposes.

Pelargonium Freak of Nature.—Of the host of Pelargoniums with variegated foliage, perhaps none presents a more singular appearance than this *Freak of Nature*, specimens of which we saw in Mr. Cannell's collection at Swanley. In general aspect it somewhat resembles the variety *Happy Thought*, but is less robust and more compact in growth. The leaves are almost entirely creamy-white, with a much crimped edging of bright green. Altogether, it at once reminds one of some of the sports of Scotch Kale.

A Striped Forget-me-not.—The list of varieties of cultivated Forget-me-nots is by no means numerous, and the addition to it of a pretty novelty that Mr. Cannell showed us the other day is a welcome acquisition. Its flowers, which are of moderate size, have a ground colour nearly white, with five stripes of blue radiating from the centre in a star-like manner, producing a pretty as well as quaint appearance. At present we are unable to speak of its habit, or whether it exists in quantity or merely as a solitary sport.

The Pelargonium Society.—We are requested to remind the members that, although the Society's show has been postponed from June 24 to July 8 in consequence of the lateness of the season, it has been arranged that the censors and executive committee should meet on the former as well as on the latter day for the purpose of awarding the Society's certificate of merit to deserving novelties in all the classes of the Pelargonium, so as to ensure them being adjudicated upon in their best condition.

Genista prostrata.—This is one of the showiest Genistas with which we are acquainted, and one which makes a capital plant for overhanging ledges in the rockery, where for several weeks it quite enlivens its surroundings by means of its bright yellow flowers. Another desirable method of growing it is grafting it on some of the erect-growing kinds, of which we saw some specimens in Messrs. Smith's nurseries at Dulwich, where they formed some of the most attractive of spring-flowering shrubs.

Iris.—We have received from Mr. Joseph Stevens a beautiful and varied group of Irises from his richly-stored garden of hardy plants at Byfleet. Nothing can better illustrate the slight use that people make of the great wealth of flowers at their disposal than these same Irises. One sees almost everywhere the old purple German Iris. The fact that there are scores of equally beautiful and yet distinct kinds which can be all easily grown in any soil in the town and in the country does not seem to be taken advantage of in gardens generally.

Geranium armenum.—By far the finest specimens with which we have yet met of this beautiful hardy plant we saw the other day in Mr. P. Rooke's garden at Weybridge, some of which were nearly 3 ft. through, and covered with handsome blossoms, which are from 1½ in. to 2 in. across, of a rich deep magenta with a central blotch of shining black, a colour with which the petals are also delicately pencilled. Considering that it is such an ornamental kind, it is not nearly so well known as it ought to be; indeed, it is seldom met with in collections. A coloured illustration of it will be found in *THE GARDEN* (Vol. XI, p. 479). In the same garden a fine mass of the lovely blue Columbine (*Aquilegia coerulea*) was very conspicuous, as was also a collection of hardy Ferns, rich in variety and grand specimens; in fact, these form the specialties of the garden.

New Hybrid Rhododendrons.—Many fine new hybrid Rhododendrons are in flower for the first time in the Lawson Nurseries, Edinburgh, and, along with the large collection of already well-known kinds now in full bloom, form a magnificent exhibition such as is rarely seen so far north. It was scarcely expected that after the late long-continued and most severe winter the flower-buds would have escaped, but, thanks to the ripening weather of last summer and autumn, the plants appear to have been matured for the emergency, and are blooming more freely and the trusses are finer than have been produced for several years. Two examples of the new hybrids have been submitted to us. One a pale yellow, very showy and distinct; this is a cross between Smith's Yellow and Russelianum. The cross was effected in 1868, and the produce is now flowering for the first time. The other hybrid referred to is one of a large batch of seedlings grown from Aucklandi and John Waterer hybridised in 1867, and has been

already well described as being "worthy of both parents." We are informed that this new and distinct strain will soon be sent out, and no doubt, from their great beauty and distinctness, will soon find their way into collections. Besides having sufficiently proved their hardiness, they will form magnificent conservatory plants for winter and early spring flowering.

Calochortus elegans var. **Tolmiei**.—A plant of this extremely rare variety is now in flower in the Kew collection. Though it is similar in some respects to the type, it is abundantly distinct, as it is considerably larger in all its parts, growing 1 ft. 15 in. high. The flowers are $1\frac{1}{2}$ in. across, of a pale lilac tint with the inner faces of the petals entirely covered with hairs. It is certainly a very desirable plant, and should be sought after by hardy plant lovers. It is found in the vicinity of the Wallamet River, in Western North America.

Gigantic Poppies.—Mr. Joseph Stevens has submitted to us cut blooms of *Papaver orientale* major from his garden at Byfleet. They are the largest we have yet seen, measuring between 8 in. and 9 in. in diameter, with a conspicuous blue-black blotch at the base of each petal and a large tassel-like tuft of stamens in the centre, which, combined with the brilliant scarlet hue of the petals, has a gorgeous effect in the garden, and is much enhanced when mixed with other subjects. It grows about 3 ft. high, and in good soil it quickly grows into specimens as much through. The fine variety is yet far from being common, but it is so much superior in all respects that it deserves to be better known, for there are no plants which tend to enliven the garden at this season as masses of these showy plants.

Fritillaria Hookeri.—A fine flowering specimen doubtfully referred to the above is now in flower at Kew. It much resembles, if it is not identical with *F. macrophylla* (Lilium Thomsonianum). It is about 2 ft. high, and bears nineteen flowers, which are rather large, and of a pale rose lilac. *F. Hookeri* inhabits the Lachong valley in Sikkim, where it grows at an elevation of 1000 ft. above sea level. It was discovered by Sir Joseph Hooker about thirty years ago.

Chrysanthemum frutescens.—We have received from a correspondent in Ireland a photograph of a remarkably fine specimen of this *Chrysanthemum*. It is said to measure 7 ft. 4 in. in height, and 18 ft. in circumference; and an accompanying note states that it was received in the shape of a rooted cutting only three years ago, thus showing a remarkable instance of rapid growth; it is also stated to have been a perfect mass of bloom for more than a month at the time when it was photographed. A plant of such a high decorative character certainly deserves to be more extensively grown than it is, both for adorning the greenhouse during spring and the outside borders in summer.

Xerophyllum asphodeloides.—We noticed flowering examples of this rare hardy plant a few days ago in Mr. G. F. Wilson's garden at Weybridge. It is tuberous-rooted, and has the aspect of an Asphodel, having dense tufts of Grass-like leaves, which are very tough in texture and rough at the edges, and which grow 1 ft. or more long. The flower stems, which are about 2 ft. high, are furnished with needle-like bracts, and terminated by a compact pyramidal raceme of snowy-white blossoms nearly $\frac{1}{2}$ in. across, borne on slender white stalks, from $1\frac{1}{2}$ in. to 2 in. long, which diverge horizontally from the stem. Such a showy and desirable plant deserves to be better known, more particularly as it is said to attain 4 ft. in height.

Habranthus pratensis fulgens.—This brilliant plant which Mr. Nelson proved to be hardy in his garden is this year sending up eleven spikes. It will be remembered that we figured it in THE GARDEN some time ago, but no coloured figure could do justice to its extraordinary vividness and colour when seen in the garden. It is in all ways quite a distinct kind among hardy flowers, and we trust will be found equally free and hardy in other gardens as it has been at Aldborough, near Norwich.

Lilium lancifolium rubrum.—It may be interesting to know that this Lily is perfectly hardy, having stood out-of-doors three successive winters here and bloomed freely; plants of it are now nearly 2 ft. high. These are planted at the foot of a low south wall (about 3 ft. high), and are growing in a bed of Czar Violets, which form their only protection. Our soil is rather light in character.—W. DIVERS, *Winton, near Maidstone*.

Iris longipetala.—This, one of the handsomest of the beardless section of Irises, is now in great beauty in Mr. G. F. Wilson's garden at Weybridge. It has erect, sword-like leaves about $1\frac{1}{2}$ ft. high, and flowers some 4 in. across, with broad, ovate, drooping falls of a lavender tint, delicately feathered with lines of a darker hue. The standards, which are rather narrow, are plain, and of a deep lilac

colour. It is a native of California, and is still one of the rarest in collections.—B.

NOTES ON HARDY PLANTS IN FLOWER.

Byfleet.—A stroll through such a garden as that of Mr. J. Stevens, at Byfleet, in which hardy plants are made a speciality, is indeed a treat, even to those who are not particularly conversant with plants. It contains between six and seven thousand species and varieties, and of course a large number of duplicates; therefore throughout the whole year it is a continuous source of interest, but it is more especially so during the summer months. At present it is gay with choice varieties of *Rhododendrons*; also with many forms of that beautiful Chinese shrub *Weigela rosea*, and Irises in endless variety, among which the beautiful *I. Victorine*, figured in THE GARDEN (Vol. XIII., p. 80), was conspicuous. The most noteworthy of the rarer plants in flower were *Lithospermum Gastoni*, a beautiful Pyrenean Borage-wort, with which many experience some difficulty in getting it established; here, however, it is evidently thriving admirably and producing multitudes of sky-blue blossoms. Another lovely plant of the same family is the mountain *Cynoglossum* (*C. montanum*), which bears terminal clusters of blossoms similar in form and colour to those of the Italian *Anchusa* (*A. italica*). We also noticed here *Anthericum* (*Chrysobactron*) *Hookeri*, a New Zealand Lilywort of rare beauty, delighting in boggy situations, and now producing its pretty orange-coloured flowers very freely in loose racemes. Scouler's *Pentstemon* (*P. Scouleri*) has proved itself to be perfectly hardy, having withstood the past winter and being now covered with handsome large lavender-tinted flowers. The Altaian *Dracocephalum* (*D. altaicum*) is a plant not often met with, though it is one to be recommended. It has a spreading, prostrate habit, its branches being covered for nearly their whole lengths with deep purple blossoms of considerable size, which are very showy. The Round-leaved *Ononis* (*O. rotundifolia*) is another beautiful plant, of shrubby, compact habit, from 1 ft. to 2 ft. high, and at the present time covered with pretty rosy blossoms. The white-flowered *Dielytra spectabilis* we found here growing stronger than we have hitherto seen it, and a charming plant it is, the pure white flowers contrasting admirably with the deep green foliage. On the rockery were numerous Saxifrages, including the elegant *S. lantanosca*, which is equalled by few and surpassed by none. *S. Mawsoni* and *Wallacei* were also flowering freely, and here was also the pretty Canadian *Cornel* (*Cornus canadensis*), with its white flowers surrounded by a collar-like whorl of leaves. A fine tuft of *Saponaria ocyroides* was highly attractive, and is certainly one of the showiest rock plants we have, hanging as it does so gracefully over the rocks, and flowering with the utmost profusion. A plot devoted entirely to variegated shrubs and herbaceous plants was a source of much interest on account of its novel appearance. It shows at a glance what a large number of plants assume this character, and when in such number there is sufficient diversity to render the collection highly picturesque.—W. G.

Weybridge.—The garden at Heatherbank has long been famous for its Lilies, but though this beautiful family is always the foremost consideration with Mr. Wilson, the choicest of the Alpine and herbaceous plants also receive much attention, the collection of which bids fair to develop itself into an important department. The favourable position of the gardens is highly conducive to luxuriant growth, for here one may see them revelling almost in native vigour, and producing flowers in profusion. The Columbines thrive remarkably well in the lower garden, which is sheltered from northerly and easterly winds. Here are huge specimens of the beautiful Californian Columbine (*Aquilegia californica*) bearing scores of pretty scarlet blossoms, which contrast finely with the canary-coloured flowers of *A. chrysantha*. Though far from being showy, the green-flowered species (*A. viridiflora*) is noteworthy on account of its rarity. Its flowers are somewhat small and of a dull greenish hue. The Cashmere Larkspur (*Delphinium cashmirianum*) is also thriving here with equal vigour, and is a highly desirable species. *D. tricornis*, which grows about 1 ft. high, is an interesting novelty with deep purple blossoms. The Edelweiss (*Gnaphalium Leontopodium*), the characteristic Alpine of the Swiss mountains, has already produced its woolly bracts, and will shortly be in full flower. Another pretty Alpine is the Arctic Bramble (*Rubus arcticus*), which grows but a few inches high, and bears numerous pretty magenta-tinted blossoms. One of the best of the dwarf *Potentillas* is *P. ambigua*, a charming species from the Himalayas. It is trailing in habit, has deep green, three-toothed leaves, and flowers of a clear yellow of about the size of a shilling. *Primula capitata*, also from the same region, has few rivals amongst hardy Primroses; the deep rich purple blossoms, borne in dense clusters, dusted with a white

mealy substance, are very attractive. *P. sikkimensis*, too, is in fine condition, and has withstood the past winter with impunity. *Symphyanandra Wanneri* is a highly desirable plant, as it is dwarf in growth, and bears pretty purplish blossoms in profusion. The same remarks apply to *Campanula nobilis*, which we saw here in very fine condition. The Alpine Poppy, with flowers varying in colour from reddish-orange to pure white, is almost a troublesome weed, so quickly do the seedlings grow. Amongst Alpines of humbler growth we noticed the charming *Dianthus glaucialis* and *alpinus*, both producing pretty rosy blossoms freely. *Ranondia pyrenaica* was represented by several plants in a most thriving condition, and thickly studded with delicate lavender-tinted blossoms. In the upper garden is the rootstock to which we have often had occasion to allude, and of which illustrations may be found in *THE GARDEN*. It is now gay with fine specimens of different varieties of *Azalea mollis*, one of which measured 4 ft. through, and was covered with large blossoms of a deep salmon tint. Near this was *Primula japonica* in grand masses, which is certainly the most desirable method of growing it, as the foliage greatly relieves the rigid habit of the flower-stem. Here also were large clumps of the pretty white-flowered *Arenaria grandiflora*, intermingled with the blue *Lithospermum prostratum*, and producing an effect which was very striking.—W. G.

INTERNATIONAL HORTICULTURAL EXHIBITION FOR 1880.

THE Committee appointed to carry out this exhibition have rejected the resolutions carried unanimously by the large meeting of horticulturists held at the Royal Albert Hall on the 27th of May, 1879, a fact which shows that they are determined that a grand international show shall not be held in London next year. If they had been willing that a fair and open discussion should take place, why did they object to a more representative deputation from the large meeting which took place in the Royal Albert Hall? Why was it that a score or more of our best horticulturists were sent away and told they could not be admitted? Why should this Committee still wish to maintain a position so much out of character with the present times? and, after being asked to dissolve and give place to a Committee of Progress, why should they still assume to themselves a position so adverse to the progress of horticulture in this country? See what can be done in a city like Manchester, and under the guidance of one determined man; only 60,000 people visited the exhibition at Old Trafford in Whitweek, and there was a profit of £800. That 60,000 people could be induced to visit an exhibition in Manchester clearly shows that if a grand exhibition were properly organized in London the number of visitors to the Manchester Exhibition may be multiplied by ten, thus showing that there would be at least a clear balance of £10,000 after all expenses were paid. I think I stated that the expenses in connection with the proposed exhibition would amount to £20,000, but £16,500 would quite cover everything. "Oh ye of little faith," why have you lost such a golden opportunity? Why should your protectionist principles be allowed to "scotch" the wheels of horticultural progress? Such another opportunity may never occur again. The first gentleman in the land looked favourably upon the scheme, Her Majesty's Commissioners for the Exhibition of 1851 were willing that you should have the finest site in Europe for such a purpose, and a gentleman who will most likely be the first City dignitary next year, and a power in himself, offered his great aid in the cause, and also offered to become a liberal guarantor. Many other noblemen and gentlemen also offered their willing support, and their names are down for a very considerable amount. I fear the opposition shown by some exhibitors must be attributed to the fear of being defeated by younger men of the present day, and to their dread lest the star of their past successes should pale before the talent and energy which would undoubtedly be brought out by such an exhibition as that proposed to be held in London in 1880. That the depression of trade can have but little to do with the success of a great international horticultural exhibition properly organised is proved by the success which attended the Manchester Exhibition this year, a fact which must be plainly evident to all whose vision is not obscured by prejudice, and who are not afraid to compete in a fair and open field.

JOHN WILLS.

Mignonette and Bees.—Mr. I. E. Johnson, St. George, Utah, finds by continued experience that Mignonette is the most valuable plant for bee-pasture—blooming early and continuing till nipped by frost—and he tells "The Rural New Yorker" that he has not a shade of doubt that a well cultivated acre of it would give a abundant employment all through the season for 500 colonies.

PLATE CLXXXV.

A GROUP OF BOUVARDIAS.

Drawn by CONSTANCE PIERREFONT.

Few plants are more easily grown, or more amply reward the care of the cultivator by the production of abundance of flowers than the Bouvardias, yet it is only with a limited number of growers that they are brought to perfection; and while those who are fortunate in this respect can bring them into flower during any month in the year, or have them in succession all the year round, the majority of those who attempt their culture fail not because they cannot grow them, but generally because they take too much pains with them in the wrong direction, such as keeping them in pots throughout the summer, and nursing them up under glass, whereby they are induced to make weak wiry wood and hard dry leaves, generally infested with insects. The chief point in the culture of Bouvardias, or, indeed, in that of any other class of plants, is to induce them to make strong, clean growth, and flowers will follow as a matter of course. Bouvardias should be treated according to the time at which they are required to flower, but as they are most useful when in bloom in winter I will first give the treatment which they should receive in order to have them in flower at that time. As the plants go out of flower they should be removed to a rather dry house in which there is a temperature of about 50°. Here they may be kept until the turn of the year when each shoot should be cut back to the last joint, and about a fortnight afterwards the plants should be turned out of their pots, all the soil should be shaken off the roots, and they should then be re-potted into small pots. They soon break freely, when they should be kept in a cool house until the first or second week in June, when they may be planted out in the open ground; they require but little attention during the summer beyond giving them a copious supply of water and an occasional watering with weak liquid manure. As growth progresses they should be pinched back to the last joint two or three times during the summer, and the weaker shoots should be continually removed, the last pinching back and thinning out being done in the last week in August.

About the second week in September they should be lifted and potted into suitable-sized pots, and placed in a cold frame, where they should be carefully shaded from the sun for a fortnight or so. They should be potted in moist soil (turfy loam) and not watered at the root for three or four days, but sprinkled lightly overhead night and morning. When the nights begin to get cold the plants should be removed to a intermediate house, i.e., one in which there is a temperature of about 50° by night and 60° by day. Here, if copiously supplied with water, and assisted occasionally with a little weak liquid manure, they will continue to bloom during the whole of the winter in the greatest profusion.

If Bouvardias are required for blooming in summer, a portion of the plants potted in the winter should be shifted into a size larger pot in the spring and kept growing. Although Bouvardias may be grown to perfection in an intermediate house, some of them, such as *B. longiflora*, *B. jasminiflora*, and *B. Humboldtii* corymbiflora, will even stand stove temperature and flower beautifully; but where much heat is given care should be taken to ventilate freely. To Messrs. E. G. Henderson & Son, from whose establishment were obtained the flowering sprays from which our plate was prepared, belongs the honour of having raised or introduced the greater part of the best Bouvardias in cultivation, and from these has been made the following selection, viz., *B. Vreelandii* or *Davisoni*, white; *B. Hogarthi*, scarlet; *B. elegans*, bright scarlet; and *B. Maiden's* Blush, pale rose. These four belong to the same section, and are the very best for outdoor summer culture. *B. Queen of Roses*, rosy-pink; *B. longiflora flammæ*, pale vermillion; and *B. candidissima*, snow-white, belong to an intermediate section, and form beautiful compact plants for winter blooming when grown in the open garden in summer. *B. Humboldtii* corymbiflora, the large white on the annexed plate, is very fragrant. To these may be added *B. jasminoides*, white; *B. umbellata* carnea, white changing to blush; and *B. flavescens*, pale yellow. Occasional sprinklings with weak Tobacco water in the evening are the best means of keeping Bouvardias free from insects.

JAMES O'BRIEN.

Paulownia imperialis.—This at present forms a striking object in pleasure grounds, its spikes of blue, Gloxinia-like flowers being very distinct from anything else in the way of flowering trees or shrubs. It is a tree about which much diversity of opinion exists as to its hardness, its wood being soft and succulent; but while *Laurustinus*, *Myrtles*, and similar shrubs were much cut up by the frost, the *Paulownia* has from every branch sent out quite a cloud of its singularly effective blossoms.—J. Groom, Linton, near Maidstone.



A GROUP OF BOUVARDIAS



VEGETABLE CULTURE FOR MARKET.

MUSHROOMS.—Enormous quantities of these are disposed of in Covent Garden Market between September and April. In nearly all cases they are grown on ridges in the open air. Sometimes these ridges are built between fruit trees, but when an open space can be had it is always chosen in preference. They are placed so as to form a series of ridges 8 ft. apart. They consist of ordinary stable manure, from which the strawy part has been separated, and which has been previously turned over two or three times to sweeten and prevent fermentation, for the fresher the manure the greater are the chances of success. Whilst the manure is being prepared, the ground selected for the ridges is levelled and lined off into breadths 6 ft. wide with 2-ft. alleys between them; the manure is then wheeled along the rows and built firmly into bluntly-tapering ridges. When constructed, they are left exposed for a few days, in order that the heat, which is at first great, may subside to about 80°. If it gets too strong, the ridges are thrown down and rebuilt, an occurrence by no means uncommon; even whole fields of ridges in August and September may sometimes be seen thus overturned. When rebuilt and the proper temperature has been arrived at, they are at once spawned on both sides, after which about 3 in. in thickness of mould are spread over the manure and made firm by being well beaten with the back of a spade, leaving the surface smooth and even. The ridges are now left undisturbed for a few days, and if the inside be not likely to get too hot a loose covering of litter is placed over them, which is increased in thickness as the heat subsides. In hard frosty weather additional litter is applied, and mats are pegged down on each side of the ridges to guard them from wet. In this way frost is excluded, and also wet to a great extent, and the litter is prevented from being blown away by wind. Watering is seldom found necessary even in the driest situations or seasons; but when it is done all coverings are removed and the ridges are gently watered with a rosed-pot, the water being used in a tepid state. When gathering the Mushrooms, the litter is carefully removed by one man; after him come others with baskets, into which the Mushrooms are collected; and, following the pickers, are other men who replace the covering, for it is an important matter not to permit the ridges to be at any time long exposed.

Market gardeners used formerly to make their own Mushroom spawn, but now they find it, as a rule, cheaper to buy it. The cakes into which it is made are broken up into pieces about the size of a Walnut, and these are inserted in three rows along each side of the ridges, from 9 in. to 12 in. apart in the rows. The first ridges are made about the middle or end of July, the main series about a month later, and some are often made in October. Dry frosty winters are beneficial to the Mushroom crop, and dull, damp ones the contrary; in very wet seasons even the best of cultivators often lose large sums of money in consequence of their crops failing. When the beds are exhausted, the manure, being thoroughly decayed, makes excellent material for applying to ground about to be planted with gross feeding crops, such as Vegetable Marrows, Tomatoes, Lettuces, Celery, French Beans, &c. Mr. Steel, of Fulham, and several other Mushroom growers, however, instead of removing their ridges, plant them with the earliest crop of Tomatoes, positions in which they ripen their fruit much earlier than in open borders. Mr. Elliot, to whom I have elsewhere alluded, is one of the most successful Mushroom growers in the neighbourhood of London; his ground lies high and dry, and he seldom loses a crop. In February, 1877, which was one of the worst seasons on record for Mushroom culture, I saw in his packing shed no fewer than a score of half-bushel baskets full of beautiful Mushrooms at one

time. The large ones were being separated from what are termed "buttons" and placed in baskets by themselves. The latter fetch the most money, but the former probably pay the grower best, inasmuch as it takes fewer of them to fill a basket. Mr. Dancer, of Chiswick, a very successful Mushroom grower, often produces large quantities in cold frames during winter; but in summer Mushroom growing in this way seldom repays the trouble incurred and the valuable space occupied. Mushrooms are also sometimes grown largely in Cucumber houses and similar places. When crops of Cucumbers are on the decline in summer, the beds are covered with warm manure and spawned, and from such beds bushels of good Mushrooms are gathered throughout the winter. The Cucumbers are allowed to grow at will or die, but are not pulled up, as the foliage even when dead helps to darken the house, and thus furthers the growth of the Mushrooms. In Vineries, too, where no Vine roots exist in the inside borders, Mushroom beds are made, *i.e.*, when sufficient heat is kept up in the houses to be favourable to their growth, which happens, of course, early in the spring. Perhaps this is as profitable a crop as can be employed to occupy such spare spaces, and if private growers, who are often short of a supply of Mushrooms, were to make up little beds in succession in similar positions, they would probably always have plenty. Growers of Mushrooms always try to get a good crop into market shortly before Christmas, as they are at that season in great demand.

TOMATOES.—During the last few years Tomatoes have risen rapidly in public favour. At one time there was comparatively little demand for them, but now acres of plants are grown where formerly there were only dozens, and hundreds of bushels of fruit are yearly imported from America. As an indoor crop, Tomatoes do not always pay the grower unless he has plenty of house-room that would otherwise be unoccupied. American growers can produce fruit much earlier and at less expense than English cultivators, who have to pay high rents and high prices for forcing material; and for this reason only a few people near London attempt the growth of the Tomato as an early indoor crop on anything like a large scale. Mr. Wells, of Barnet, grows his Tomatoes in beds of soil that previously had been occupied by Cucumbers, and even then the soil, he informed me, was rather richer than he could have wished, for if it be too light and rich in character Tomatoes make rank growth at the expense of fruit. The plants which I saw, however, at Barnet, were loaded with bloom, and promised to bear heavy crops. The variety grown was unnamed, but seeds of it were obtained from a grower at Sherborne, who exhibited it at South Kensington some few years ago, and so well does it answer the purpose that Mr. Wells has never grown any other. One year he put out a few plants in a bed of burnt ballast out-of-doors, and although they did not grow very luxuriantly, and did not ripen their fruit perfectly, owing to their being planted late, yet the crop was a heavy one, and the fruit, which was picked green and ripened on a shelf in one of the houses, fetched in the market in November about 2s. per dozen. Mr. Bennet, of Rabley, grows Tomatoes in beds in houses in the same way in which Vines are grown. The first crop, being brought on early, yields fruit in April. The plants are obtained from seeds or cuttings, planted in the beds in which they are to fruit in January. They are subjected to plenty of heat and moisture and receive abundance of water at the roots, and thus treated they yield heavy crops, which ripen in April and May, and which are sold in the market at remunerative prices. Stopping the shoots frequently and fertilising the blossoms are important points in Tomato culture both indoors and out,

inasmuch as both operations not only increase the quantity of fruit, but also its size and quality.

Outdoor Tomatoes in market gardens are not planted against walls, as is done in private establishments; but a warm situation, convenient to water, is selected for them in open positions, and in such positions they produce abundance of fine, large, well-coloured fruit. The earliest planted ones are generally put in the most favourable positions, such as a warm border, or on either side of "spent" Mushroom ridges, where they are well sheltered. If planted too early, they are liable to be cut down by late spring frosts, in which case entire removal and replanting is the remedy usually applied; if the damage be not too great, however, the sound eyes produce shoots that eventually carry heavy crops. The large red-fruited sort, which much resembles the Orangefield, is the principal kind cultivated in London market gardens; and growers for market will not be easily persuaded to exchange it for any of the novelties that have lately appeared among Tomatoes. It is an abundant bearer, hardy, and, although its fruits are not so shapely as those of many other kinds, they are excellent in quality. Early in spring, the seeds of this kind are sown broadcast in a frame, in which a bed of fermenting manure, covered with 6 in. of light soil, has been placed. These frames are protected during cold weather by a covering of litter or mats placed over the sashes; but during favourable weather this is removed and air is given, in order to render the young plants as strong, healthy, and stubby as possible. If the plants come up too thickly they are thinned, and when they are about 2 in. high they are pricked out into 4-in. or 6-in pots, two plants being generally put into each pot. Frames are sometimes prepared by placing in them fermenting manure in the form of a bed to a depth of 15 in., well trodden down, on which are placed 8 in. of soil, and in such beds pots filled with mould are plunged up to the brim. The plants are then dibbled into the pots, and the frames shut up and kept close for a time, until fresh root-action has taken place. They are afterwards kept freely ventilated until May, when the sashes are entirely removed during the day, and replaced and tilted up at night and in wet weather. During the last week in May and first fortnight in June the plants are thoroughly hardened off, although still unable to endure even a slight frost, and they are planted in warm positions, as before stated, on Mushroom ridges or similar places. As soon as the fruit has attained its full size, the leaves are turned aside so as to expose it to the sun, by which means it ripens more readily, and is of a better colour than when shaded. The ripe fruits are generally picked off twice a week, leaving the greener ones a little longer, so as to mature themselves; but should frost come, all fruits are picked off, and spread out on hay in a frame under sashes, where they eventually become red. The amount of fruit borne by a patch of Tomatoes in a well-managed market garden is really wonderful. Good Tomatoes of outdoor growth fetch £1 per bushel in Covent Garden, and some large growers gather as many as eighty bushels per week. Some idea of the extent to which Tomatoes are grown in the Fulham Fields may also be gleaned from the fact that some of the "quarters" hold upwards of 10,000 plants, and that some growers have several such quarters.

CUCUMBERS.—Of these thousands are sold in the London markets nearly every week in the year. As an indoor crop either in winter or summer under favourable circumstances, Cucumbers rank amongst the most profitable, and as an outdoor crop in warm localities or in temporary frames, Cucumbers yield good returns, and there is never too many of them, for what cannot be sold in the market are speedily bought up by pickle merchants.

CUCUMBERS IN HOUSES.—One of the most extensive growers of Cucumbers in houses is a market gardener at Potter's Bar, who has many houses devoted to their culture, and the quantities cut every year for market are almost incredible. In one year over 25,000 Cucumbers were sent from this place to London, which represented some £500. They are principally grown in low span-roofed houses, with 3-ft. beds on each side, and in some cases a bed in the centre is devoted to Melons, the Cucumber plants at the sides being kept sufficiently within bounds not to injure the Melons by their shade. The Cucumber seeds are sown in the autumn, from which strong plants are obtained to furnish the winter supply; these are planted in loam and manure, and continue in bearing until spring, when they are succeeded by others planted out later in the season. During the summer Cucumbers are not grown here to any great extent, as, owing to such large quantities of outdoor or frame-grown ones coming from all the market gardens round London, house room is too valuable to be occupied by them. Cucumber-growing in market gardens is carried on as a system very different from that practised in private gardens. Where market growers spend 20s. in fuel and other matters connected with Cucumber growing, a private cultivator, as a rule, spends 30s., and where the latter cuts one Cucumber from a plant the former cut six.

One of the best examples of Cucumber-growing with which I have met, considering the primitive character of the houses and other means at command, was in Mr. Wells' garden, near Barnet, a place somewhat low-lying and otherwise by no means favourable for such a crop; indeed, Mr. Wells informed me that his out-door fruit trees, of which he has some remarkably healthy specimens, have never yielded him any fruit worthy of mention for many years, and in the spring of 1877 when I visited his place, the blossoms of Apples, Pears, Plums, Strawberries, and other outdoor crops were completely ruined by frost, while scarcely a mile off the blossoms of fruit trees in other gardens were uninjured. But it is Mr. Wells' indoor department with which we are now most concerned, and certainly when we take into consideration the character of the glass structures as well as their exterior arrangements, the results obtained from them are truly astonishing. There are in all about a dozen glass houses, chiefly span roofed, and most of them are devoted to Cucumbers. These houses are each about 100 ft. in length, and are sunk to a depth of 3 ft. or 4 ft. A pathway runs through the centre of them, and on either side are beds about 3 ft. wide in which the plants are grown. In some cases these houses are placed side by side, and instead of having partition walls the roofs of the houses adjoining are supported on brick piers built from 5 ft. to 6 ft. apart, a plan which admits of a free circulation of air, and at the same time economises heat; indeed, to free circulation is no doubt, to a great extent, due the marvellous results obtained, for there is no other apparent cause why Cucumbers should thrive and bear better here than they do in other places, but such is the fact. The heating apparatus is by no means elaborate; indeed, one would almost imagine there was too little piping to keep early Cucumbers at a proper temperature. The only variety grown here is the Rabley, a short-fruited, prolific kind, which meets with a ready sale in the market on account of its excellent flavour, and owing to its being but small the fruit can be sold at a cheaper rate than if it were larger, a matter of no small importance in the case of early Cucumbers, for Mr. Wells informed me that where he could grow one good fruit of Telegraph—a variety which he formerly grew to a large extent, and which he still considers the best variety in cultivation for private establishments—he can grow two at least of the Rabley, and he finds no difficulty in disposing of them; whereas, when he grew Tele-

graph he had often to sell it at an unremunerative price. All Cucumber plants here are raised from seeds sated on the place; a little house is provided in a sheltered situation for raising them; the seeds are sown in small pots plunged in beds of Cocoa-nut fibre, and when up the plants are potted into 4-in. pots, out of which they are transferred, when ready, to the beds. The first sowing takes place early in December, and the first house is planted early in January; five weeks afterwards the plants are sufficiently advanced to bear a moderate crop. Soon after this two, or perhaps three, more houses are planted to succeed the first, and when the plants in the latter begin to bear fruit those in the first house are pruned and allowed a few weeks rest, in order to enable them to bear large crops when Cucumbers are most in request. The remaining four houses are planted all at one time, and the plants in them continue to bear enormous crops until September or October, after which time they are done away with, and the houses are devoted to other purposes. The earliest houses are furnished with six rows of 3-in. piping, one row being placed on each side of the house, and a double row along the beds on each side of the pathway, the later houses having simply a flow and return pipe running all round them. The soil used here for Cucumber growing is such as is obtained from the garden outside, mixed with a quantity of half-rotted stable manure, and after it has been used one year it is returned to the garden whence it came, and being considerably enriched the whole garden in time becomes improved. Bottom-heat is never used here even in the case of early houses. The beds in which the Cucumbers are planted consist of stiff clay to within 1 ft. of the top of the wall which surrounds the beds. Above the clay is placed a ridge of soil 8 in. or 9 in. in depth, and into this the plants are put 2 ft. apart: occasional mulchings of manure are given when the roots appear on the surface, and abundance of tepid water is at all times applied to the soil. The plants are in all cases trained up wire trellises fixed about 1 ft. from the glass, the main shoots being led upwards until the points are within 1 ft. of the middle rafter directly over the pathway, when they are stopped, an operation which causes them to break strongly at every joint. After this stopping is practised regularly in order to ensure as large a crop as possible, each shoot being pinched off at one joint beyond the fruit. The labour involved in stopping, tying, and regulating the shoots during the summer when all the houses are in full bearing, is very great, as all those who know the time which it takes to keep one small house in order will quite understand, and on an average, from this place alone, 30,000 Cucumbers are cut yearly for market. During the spring the houses not occupied by Cucumbers are filled with Straw-berries.

In another garden near London, of no great extent, marvellous results are also obtained in the way of Cucumber culture. The houses in this case are furnished with troughs made of rough boards about 10 in. deep and 3 ft. wide. Into these troughs soil, consisting of loam, road-grit, and horse-manure, is placed, leaving plenty of room for top-dressings. This plan answers perfectly, as slight dressings, frequently applied, maintain health without over-stimulating. The point most noticeable is the small modicum of soil allowed for the plants to grow in. They stand about 2 ft. apart; they are grown with straight stems about 12 in. or 18 in. long, and are trained on temporary trellises 1 ft. from the glass, which is evidently not far enough, as both cold and sunshine affect them at that distance. The heat is supplied by means of flues—that is, 9-in. socket pipes put together with cement do duty as brick-flues. A row of these pipes is carried under the middle of the troughs. In

excavating the path, the earth at the sides is left; on the top of this runs the pipe-flue, almost close to the bottom of the troughs in which the plants grow. This flue is the only source of heat; in severe weather straw mats are put on, and are found to be of great service. The cubical contents of one of these structures is very little; and, limited as the surface is, it can readily be covered up to economise the heat needed inside. The plants for bearing all spring and summer are put out in the early part of winter; the object being to have plenty when the demand is good. The quantity of fruits produced in these small houses is something marvellous. They are cut three times a week, and supplied direct to the consumers—only the rough ones are sent to the market for what they will bring. The sort which this grower prefers above all others is Sutton's Perfection. C. W. S.

AMERICAN NOTES.

About a Wild Garden.—The idea of the wild garden is being taken up well in America judging by the following: I wish I were sure that this could catch the eye and have the attention of the many who really love flowers but, for one reason or another, have no garden. Many a country dweller who intends to have a flower garden looks upon it as an undertaking that requires an outlay of time, labour, and money. It is to be in the good time coming, and in the meantime he gratifies his love for flowers by occasional rambles to see what the woods, the meadows, and the coppices afford him. Now suppose that instead of tramping for some miles for a few wild flowers, these could all be found—not only these, but a great many more—all within the area of a few yards! Would he not rejoice at it? This is just my idea of a wild garden. A nook somewhere—not already too much crowded with natural growth, where the roots of trees and shrubs will take all that the soil has to give—but a good bit of unoccupied ground. Here put all the native flowers that are desirable, with a whole host of hardy plants from other countries. There are few places that do not afford such a spot—no matter if it be at a distance from the house; this garden has not to be watered, watched, and tended. But there may be those who, like myself, prefer to make a wild garden. Our wooded hill-side is too far off, though that is more or less planted, and even the pasture has a corner penned off for moisture-loving plants. There is not much wild about my wild garden save the plants. The fence is hidden by a row of closely planted evergreens. A side is made "wild" by a drapery of Virginia Creeper and Wistaria, and in this corner is

A Rockwork.—This rockery, of the stones at hand, was made with but one object in view—growing plants. It would defy any geologist to account for its upheaval, especially as it is mainly of new red sandstone, the worst of all rocks for the purpose, but all that we had. Of natural rock scenery there is little, but of cracks and crevices there are many. The ground around the rockery for some distance forms a part of the wild garden. Last autumn we had a goodly collection of plants from Europe, but I was away when they were planted, so this spring I had not only the pleasure of seeing the plants, but of making new discoveries. I have read of an eccentric literary man, whose name I have forgotten, who was very fond of confectionery; one of his oddities was to hide sugar-plums and the like in all sorts of odd places, that he might enjoy the pleasure of finding them unexpectedly. My first visit this spring to the wild garden reminded me of him, in discovering new plants in unexpected places, and I could understand his satisfaction over his discoveries of hidden sweets.

Plants for the Wild Garden.—While in almost every locality there are sufficient flowers to make a wild garden attractive, and one is worth having for these only, there are a great many from other countries that are able to make themselves quite at home, and become naturalised. Of course the wild garden will have a succession from early spring until the frost puts an end to all bloom, and this mentioning of those that greeted my first visit is intended only to show some of the early blooming plants that may be introduced. At the foot of the rockwork was a sheet of brilliant white, than which nothing could be more beautiful. Yet it was only the common Blood-root (*Sanguinaria canadensis*). Near by, that best of early spring bulbs, *Bulbocodium vernum*, earlier than the Crocus, and in a mass more showy, had nearly gone out of flower. Another charming early native is the Rue Anemone (*Thalictrum anemonoides*), delicate in foliage and habit, and bearing an abundance of small white flowers which have not the brilliant opaque white of those of the

Blood-root, but in their way are quite as pleasing. This is one of the few flowers that show a tendency to become double in a wild state. But speaking of doubles, I know of none of our wild plants that produce such beautiful double flowers as the Hepatica or Liverleaf (*Hepatica triloba*). It is common in the woods, at least in all the Eastern States, flowering as soon as the snow is off. It is also a native of Europe, and Europeans have secured a number of double forms possessing a variety of colours. I have found it wild varying from nearly a pure white to the deepest blue, but never saw any tendency to doubleness. There are, however, double white, pink, red, blue, and purple, with intermediate shades, and each one a gem in itself. I find that we have quite a collection of native and foreign species of *Erythronium* or Dog's-tooth Violet. Our common *Erythronium americanum* is welcome, but when it comes to the question of beauty the European *E. Dens-canis* is far ahead of it. In beautiful contrast to this is the White Dog's-tooth Violet, rare in the East, but common in the far West, and well worth having. Those who like oddities in the way of plants will admire the *Asarum* or Wild Gingers. One species, known as Canada Snake Root, is common in all the Northern woods. These, with two Southern species, another from Oregon, and one from Europe, make up a group which, while not showy, are interesting. When we come to showy plants in the wild garden, we find *Aubrietia deltoidea* quite a sheet of delicate purple. In a corner there is the Winter Aconite, one of the earliest of all, and a little later, *Adonis vernalis*, with flowers of a brighter yellow, and foliage so dark green and beautifully cut that it would be worth growing for that alone. Close after *Adonis* comes the slender-leaved *Pæony* (*Pæonia tenuifolia*), double and single, so beautiful with their crimson flowers, fine foliage, and withal so rare. The Grape Hyacinth (*Muscari botryoides*) naturalises well in the wild garden, and both the dark blue and white kinds seem to be quite at home. Among other native plants worthy of special notice are *Dicentra Cucullaria*, three-flowered Geum (*Geum triflorum*) from the far West, and more showy in fruit than in flower; the American Pasque Flower (*Anemone patens* var. *Nuttalliana*), its large flowers making it noticeable. But it would make too long a list to name everything, my object being to commend the wild garden to every lover of wild plants. Our natives can grow there, and a large number of foreigners may be naturalised and made wild. It can be made a source of great pleasure to those who can have no other garden, while to those who have the most formal borders it will be a pleasing change to have a nook or corner where their favourites can be at home.—"American Agriculturist."

Water Melons.—Mr. E. A. Riehl, Alton, Ill., tells the "Rural World" that he has cultivated every Water Melon usually described in seed catalogues, and discarded all but the Ice Cream—each specimen of which he finds of the highest excellence, unlike other varieties which produce "a few choice ones and the majority poor."

Roots in Water Pipes.—Mr. T. S. Gold, of West Cornwall, in a communication to the "Connecticut Farmer," mentions the obstruction of water caused by a bunch of hair-like roots about 15 in. long, all growing from one that had found its way through a little hole in the 8-in. lead pipe, which it completely filled.

The Plough in the Garden.—Mr. W. F. Clarke prints in his "Western Advertiser" columns a plea for "The Improved System of Farmers' Gardens" frequently suggested in "The Tribune": "Select a piece of land, unencumbered with trees or even bushes, affording free scope for the plough. Discard beds and sow everything in long rows far enough apart to admit of tillage with the horse hoe. By adopting this method hard labour is reduced to a minimum. It will cost but a little extra trouble to have sufficient good manure on hand to make the land capable of growing everything sown in it to such a pitch of perfection as to be a constant source of pride and pleasure." We copy this to give those who cultivate in the old-fashioned, laborious, non-effective way an opportunity to compare the obvious advantages of the proposed improvement over the objectionable garden plan of our forefathers, which kills weeds only at the cost of persistent hard work with rake and hoe.

May Bugs.—Mention is made in English records of 1747 of the collection of eighty bushels of the larvae of the May bug on one Norfolk farm. The same pest is now very destructive in France, it having been stated at a sitting of the Paris Central Horticultural Society that in one instance eighty-seven days of labour were expended on an acre, each man disabling 5000 of the grubs daily. The most effectual warfare seems to be to fight the bugs themselves, and one member spoke of having so successfully employed school children to collect them in cans and kill them with boiling water that he has not been much molested since.

THE INDOOR GARDEN.

SELAGINELLAS—THEIR USES AND CULTURE.

ALL who have glass houses should grow some of the many beautiful forms of Selaginellas, for not only are they plants of extremely easy culture, but they delight in situations in which the generality of plants would only linger and die. A saturated atmosphere, combined with partial shade, is what suits them best, and if planted in good free soil, they attain in such positions a high state of luxuriance, forming a verdant carpet ever fresh and beautiful, and which even the dulllest days of winter have not the power to dim. Selaginellas exhibit considerable variety of foliage, and a collection of a dozen varieties of them forms a very attractive feature in any glass structure. When mixed with fine-foliated and flowering plants they add much to the beauty of the arrangement; in fact, plant groups cannot be set off to advantage without them. Vast quantities of *S. Kraussiana*, commonly, but erroneously, called *denticulata*, are grown by the London florists for this purpose alone, and well-furnished specimens in 4-in. pots command a ready sale in Covent Garden Market. This kind, being of a very hardy, enduring character, is preferable to all others for general decoration, but other varieties may be used in the same manner. I once saw some of the varieties employed in a very pleasing manner. They were grown in large pans, and were fine masses of healthy, well-developed foliage. As placed, they constituted an edging to a bank of fine-foliated and flowering plants, forming a bright, fresh belt of verdure, the effect of which was intensified by the white stone floor and the bright flowering plants in the background. Many kinds of flowering plants, when in bloom, are so overpoweringly brilliant that they require the association of green-leaved plants. They do not in themselves possess verdure enough to counterbalance the glowing mass of colour which they display. Tulips and Azaleas, for instance, gain much by being surrounded by a fresh, cool carpet of verdure; in fact, there are few flowering plants whose charms are not enhanced by this combination. Many of these Club Mosses will thrive very well in a dwelling house, and if placed during summer in a shady situation, and occasionally taken out and well syringed, they will maintain their beauty for a long time. Some of the kinds may even be placed during summer in the open air, and if a cool, moist situation be chosen for them they appear to enjoy the exposure. *S. Kraussiana*, indeed, appears to be quite hardy in some parts of England, and we shall probably find in the course of time that many others are of a more enduring character than is now supposed to be the case.

Although Selaginellas are easily cultivated, they nevertheless require in order to have them in perfection a good free soil. Drainage, too, is an important point, as, owing to the necessity for constant waterings, unless the superfluous moisture can pass off freely, damping is almost sure to take place. Any great depth of soil is unnecessary; 6 in. of well prepared compost will suffice to maintain Selaginellas for years. A good mixture for this purpose consists of leaf-mould, peat, and river sand in equal proportions. In such a compost any of the kinds may be relied on to succeed, although some of the strong-growing varieties enjoy the admixture of a little loam and well-rotted manure. It is often stated that Selaginellas should be renewed yearly. This, however, entails more labour than many can well afford, neither is it indispensable, as if the planting is carefully done, and the whole of the turf clipped over in early spring, it may be maintained in good condition for years. When allowed to run into the second year without clipping, it becomes drawn and weakly at the bottom, and is then apt to die off in large patches; whereas, if closely shorn off a new growth is made, and fresh life and vigour are infused into it sufficient to carry it on for another season. A few potsful of this kind should be grown by those who have apartments to decorate. A dozen good strong well-rooted pieces, dibbled into a 4-in. pot, and placed for a time, until well established, in a close warm house, to be removed to a cool structure to complete their growth, will form fine specimens by the winter. Many who grow this variety in pots commit the error of placing the plants close together. Such a practice has the effect of preventing the formation of a mass of healthy foliage round the pot, and unless the pots are nearly concealed the utility of this plant is greatly impaired. Each plant should stand quite free from its neighbour during the growing season. Plants thus treated will be found immeasurably superior to those which have been allowed to intermingle one with each other, and will be of great service for many purposes.

S. apoda is an extremely neat, dense-habited species, well adapted for forming a narrow border on the stages of stoves and Orchid houses; it may also be used with good effect in combination with other plants such as strong, free-growing Ferns. If, when the Fern is shifted, a few tufts were pricked in round the edge of the pot by the time the Fern has become fairly established and filled the pot with roots, the Selaginella will have covered the surface soil with a fresh green carpet. This species is also admirably suited for Warden cases,

and it may be grown to great perfection in an ordinary sitting-room, if covered with a bell glass. Very pretty and interesting specimens may be formed by associating it with some of the dwarf species of Ferns such as *Asplenium Trichomanes*.

S. helvetica and *caulescens* may be both utilised in the same way, as may also *mutabilis*, a highly interesting species, owing to the fact of the foliage changing to white towards evening. Those who grow plants in rooms should certainly include in their collection one or more of these kinds; they are always fresh and bright, and are so easily managed, not requiring, if treated as above recommended, any attention for days together.

S. Kraussiana and *helvetica* may, if need be, be turned to good account in the sub-tropical garden. They luxuriate during the summer months in shade and moisture. When used for carpeting the soil between Tree Ferns, Palms, and other fine foliaged plants, they

that metallic hue which constitutes its chief charm. *S. africana*, *atro-viridis*, and *erythropus* are all fine, distinct, strong-growing kinds, that will repay liberal, careful culture. They may be grown into fine plants in wide shallow pans so drained as to allow of frequent moistenings. In early spring they should be shaken out and fresh potted, placing them on a damp bottom, where a certain amount of filtered light is admitted to them. In Orchid houses and stoves which have open stages many such positions may be found, and it would in all cases be better to thus utilise and beautify such situations than, as is often the case, to allow them to remain bare and unsightly. If a body of soil some 6 in. thick be placed underneath the stage, and the Mosses planted out in it, they will flourish there with but little trouble, and will add much to the general good appearance of the structure.

Byfleet.

J. CORNHILL.



Davallia (Microlepia) hirta cristata.

Nephrolepis Duffii.

not only find there the atmospheric condition essential to their well-being, but they enhance in a considerable degree the beauty of those plants with which they may be associated. On rockwork, again, in winter gardens, where natural effects are aimed at, many of the *Selaginellas* may be made to play an important part. Some of the large-leaved kinds, and the climbing species *caesia arborea*, if allowed to ramble freely and unrestrictedly, present a very graceful appearance.

S. caesia and its variety *arborea* are two very distinct and attractive kinds. The foliage of both varieties displays tints very uncommon in plants, and the last-named kind is doubly valuable on account of its climbing habit. Under favourable circumstances it makes shoots some feet in length, and may be trained up the trunks of Tree Ferns or the back walls of hothouses, or it may be made to clothe the supports of the plant stages. It is a free-growing variety, but requires a warm, humid atmosphere, otherwise it fails to exhibit

Davallia (Microlepia) hirta var. cristata.—This elegant variety of the widely dispersed *Davallia hirta* was imported by Mr. B. S. Williams from the South Sea Islands, where the crested form appears to be rather frequent. It is an admirable Fern for baskets and broad pans, the feathery extremities being exceedingly light and graceful. The accompanying figure represents the extremity only of a frond.

Nephrolepis Duffii.—Probably a crested variety of either *Nephrolepis exaltata* or *N. cordifolia*, both of which have a wide range of distribution; but, so long as only sterile fronds are known, it is not easy to settle this point, as the most important distinction between the two species is in the fructification. This beautiful Fern was collected by Mr. Duff, of the Sydney Botanic Garden, in the Duke of York's Island, one of the Union group in the South Pacific, and was imported into this country by Messrs. Veitch, by whom it has been distributed.

L A W.

HOLE v. BRADBURY.—This action was brought for infringement of the copyright of a book called "A Little Tour in Ireland, by an Oxonian, with Illustrations by John Leech." The work was the joint production of the Rev. Samuel Reynolds Hole (now a Canon of Lincoln) and the late Mr. John Leech, who were intimate friends, and who in 1858 made a holiday tour in Ireland, Mr. Hole contributing the writing and Mr. Leech the sketches of the book they completed on their return, which was published by Messrs. Bradbury & Co. in 1859. The publishing arrangements were made by Mr. Leech, and he appeared to have verbally made the ordinary publisher's agreement with Messrs. Bradbury for half profits. No written agreement was made, but Messrs. Bradbury's books showed an allowance of half profits to the authors. The work had been successful to the extent of the sale of 3000 copies. Mr. Leech died in 1864, leaving his property to his widow, upon whose death, in 1868, the co-plaintiff, Miss Ada Leech, became her sole next of kin, and entitled, by the Copyright Act, to stand as the personal representative of Mr. Leech. Bradbury & Co. had reprinted the work without the consent of either of the authors or their representatives, and the plaintiffs now contended that the registration of the copyright in their name was *prima facie* evidence of their title under the statute, and asked accordingly for an injunction against the defendants, for an account of their receipts from the work, and for the delivery up of Mr. Leech's drawings and blocks by the defendants, Mr. Hole being in possession of the manuscript of the book. The defendants claimed to be themselves entitled to the copyright, and represented that the arrangement with Mr. Leech (who was in their employ for illustrating "Punch") was that he should furnish sketches during a trip to Ireland in 1858, the plaintiff, who accompanied him as a friend, arranging to write the letterpress, but the book was to be the property of the firm. It was completed the following year on a second visit to Ireland by Mr. Leech, in company with Mr. Mark Lemon, then editor of "Punch," and then Mr. Leech agreed to sell the book to the defendants' firm on the terms that any loss was to be sustained by them exclusively, but half of any profits were to be paid to Mr. Leech. That arrangement was ratified and confirmed as the defendants alleged by the plaintiff, Mr. Hole.—His lordship held that an injunction must be granted as prayed, restraining the defendants from publishing, and an account of profits must be rendered by them. They must also deliver up Mr. Leech's drawings and the blocks, and pay the costs of the action.

GARDENING FOR THE WEEK.

Flower Garden.

With such cold wet weather as that which has now prevailed for many weeks past it is quite a relief to be able to say that bedding out is finished; growth is quite another matter, yet, though this has been little, it has been sufficient to justify a hope that all will presently come right; but, in the meantime, no cultural effort should be spared to attain perfection in the way of display at the earliest possible period, for the longest season during which bedding plants continue in perfection is far too short when the expense and pains requisite to produce it are taken into account. As soon as fine weather sets in stir the surface soil of the beds, for the rains harden it to such an extent that if not moved it soon cracks, and growth is checked. A small hoe or hand fork can be used for this purpose, except in the case of carpet beds, which, being planted thickly, a hoe cannot be used; recourse must therefore be had to a sharp-pointed stick, with which a handy boy will stir up many beds in the course of a day. With an eye to effectiveness, let all groundwork, edgings, and divisional lines be kept true to design by frequent and regular pinchings or peggings; if time thus to keep them in order cannot be afforded, no attempt at geometrical arrangements should ever be made; on the contrary, preference be given to masses of colour arranged in lines or circles, broken at regular intervals by means of "dot" plants, in order to obviate the monotony of flat surfaces. All kinds of bedding plants will be the better for having their flower-stems picked off till growth is established; at all events none should ever be allowed to seed, which *Violas* and *Fansies* are already doing, and if not picked over they will soon give up flowering. *Calceolarias* never fail to flower throughout the season if their flower-stems be pinched off once after planting, and the same may be said of *Lobelias*, which we clip over with sheep shears. Tall bedding and sub-tropical plants will require support, which it is best to provide at once, ere injury accrues through storms of wind or rain. Small twiggy branches make excellent supports for all plants that do not exceed 2 ft. in height, such as *Petunias*, *Perilla*, and *Calceolaria amplexicaulis*; but all large-growing sub-tropical plants must

have separate stakes proportionate to their height, and the same remark applies to *Dahlias* and *Hollyhocks*, the growth of which is more robust than usual. Standard *Roses* may also require renewal in the way of stakes lest their heads get overweighted and break off; keep them free from suckers, and in showery weather sprinkle the beds with soot or guano, as where neatness has to be studied, surface mulchings of rotten manure—the best stimulant—are not always practicable. Keep dead and decaying flowers picked off, and as soon as any have done flowering, more particularly those of a straggling habit, shorten back the shoots in order to induce a second bloom. Complete the thinning and planting out of annuals; this has been a favourable season for such work, and if properly done a fine autumnal display may be expected, *i.e.* if the plants be protected from slugs, which unfortunately are very numerous. As soon as planting is finished, there should be a general clearing up of walks, clipping and trimming of edgings, or any other operation that may conduce to neatness.—W. W.

Auriculas.—The earliest potted plants are now making strong healthy growth, and afford a striking contrast to those not potted; the latter have also made growth, but the difference between the two is easily recognised, and the leaves are not nearly so richly coloured. A few of the seed pods show signs of ripening, and as soon as the seeds are gathered they will be sown, and the pots placed in a hand-light or cold frame behind a north wall. A correspondent asks, "What am I to do with plants that have finished flowering?" The answer is, pot them at once, and place them in a frame behind a north wall or some similar position. Keep the frame close for a few days, but not quite close; tilt the lights at the back an inch or two. In potting remove nearly all the soil and examine the tap root; this is often in a state of decay, but whether it is so or not, it ought to be shortened. Let the soil be light and moderately rich; it should be composed of, say, four parts turfy loam, one of leaf-mould, one of rotten manure, and some sharp sand. The largest plants may be potted in 5-in. pots, and the smaller examples in 3-in. ones. Overpotting is a great evil. I potted three plants of a very choice variety some two months ago. One was a little larger than the others, and I ventured to pot it into a 4½-in. pot; the other two were potted into 3-in. ones; the result being that the two in small pots are now the largest and healthiest.

Carnations and Picotees.—These are now making exceedingly good growth, and the plants are as healthy as I have ever seen them. See that the more common kinds in beds and borders are kept clean; they are sometimes attacked by a maggot which eats into the centre bud. This, when perceived, must be destroyed, even if the bud has to be sacrificed.

Hollyhocks.—Those who have a clean stock of the best-named varieties of these are fortunate, and should be careful how they introduce plants from other places amongst them, for the *Hollyhock fungus* has exterminated many fine collections. It is of little use trying to combat this disease in any way except by burning the plants root and branch.

Gladioli.—These, although they started slowly, are now improving rapidly, their growth being strong and the foliage deep green, a sign that in time we will have healthy, well-developed spikes of flower. It is singular how this plant degenerates in our climate; even seedlings in the course of a few years fall off rapidly as regards constitution, although in quality the individual flowers do not suffer at all. Seedlings are easily raised, and flower strongly the year after sowing. I usually sow in pots, raising about thirty plants in a 7-in. pot. These require careful treatment during summer, and when the leaves die off the soil is shaken from the roots; they are then packed away, each sort in paper, with a very little dry sand amongst the roots.

Tulips.—The leaves of these are beginning to assume a yellow tinge, and in ten days, or at most a fortnight, we will dig them up and store them away in a dry place, taking care that none of the labels get displaced. The old Tulip growers did not use labels, nor do the principal growers now; they enter each variety separately in a book, beginning at one end of the bed and working to the other end. That glass coverings are an advantage has been shown by the Rev. F. D. Horner having carried off all the principal prizes last week at Manchester, and it is a question whether a light glass structure is not in the end quite as cheap as the iron framework and thick cloth coverings that are so much used, the wear and tear of material and the labour involved, to say nothing about untidiness, being very considerable. What does Mr. Horner say to both systems after having given them both a trial?

Hardy Cyripediums.—What is the best time to pot these may well be asked. This is an operation which I used to perform in winter just before the crowns began to move, and I have been very successful. This year some of them have been repotted in full leaf,

all the soil being removed from the roots first. I thought this would not answer, but I have been much pleased to see the plants gradually becoming stronger, and some potted three weeks ago are well established. The largest proportion of them take more kindly to turfy loam than peat; the roots do not seem to start into active growth until the top has grown very considerably; and in all my experience as regards growing Orchids, I find that the best time to repot is just when the roots begin to grow.—J. DOUGLAS.

Conservatory.

This structure will now, when the spring-flowering, hard-wooded plants—including Azaleas and others—are over, be dependent for a display on summer blooming plants alone. The large-flowered Pelargoniums, like everything else influenced in their progress by the more or less sunny character of the weather, are this year more than usually late, and such as in ordinary seasons would be getting over will at the present time be about their best. The nature of these plants is such, that they are very impatient of any excess of water, but, being as they are, if skillfully managed, furnished with a mass of feeding roots that completely permeate the soil, they should in dry weather be examined as to their requirements in respect to water twice a day, for if ever allowed to get dry to an extent that will cause them to flag even slightly, every expanded flower will fall. The bloom of almost any plant at this season is of shorter duration than earlier or later when the weather is cooler, and to keep up an effective display, nothing must be left undone to prolong the bloom to its full extent; shade the roof during the daytime as far as may be requisite, and do not allow the atmosphere to get into that parched condition often met with in conservatories, and which, especially when the sun is on the glass, is alike hurtful to the plants, and renders an inspection of them disagreeable. In such houses water cannot be thrown about the floor to moisten the atmosphere in the way in which it can be done in some structures, as it makes the paths unpleasant to walk upon; but a good deal can be done by keeping the borders in which the climbing plants are grown sufficiently moist, and if the whole of the stock, so far as it requires water, be attended to the first thing in the morning, whatever is spilt about will get dried up early enough, and the moisture from the newly watered soil in the pots will do much to correct the drying influence of the sun and air; for this reason, and also on account of the plants, should any happen to be dry through having escaped the eye of the attendant, it is much better to do the general watering in the morning than to defer it until evening, though in the case of many plants that occupy small pots, and these very full of roots, in exceptionally hot weather it is necessary to go over them at both ends of the day. Connected with this matter of watering, it may be well to mention as a reminder that if any plant be discovered in the middle of the day that has got very dry, it ought at once to be removed to a shady position before water is given, for there is not anything more likely to cause death than the application of water to the roots of a plant when the soil has been allowed to become very dry, if standing where it is only under the partial influence of the sun.

Fuchsias.—The first portion of large Fuchsias will now be in full bloom, but unless means be taken to keep them going, their flowering will soon be over. The plants should be gone over twice a week, in order to remove the seed-pods as soon as the flowers have fallen, to the formation of which some varieties are much more disposed than others, and if allowed to remain on the plants they have a more exhausting effect than the production and development of flowers; but even with this attention, if the plants be not kept in a state which enables the shoots to keep continually extending, the blooming is necessarily soon over. Fuchsias like manure-water, but it is necessary to give it them much weaker than to many plants, otherwise it causes the buds to drop off in quantity before they expand. Instead of giving it to them periodically somewhat stronger, I have found it better, after they have begun to bloom, to use nothing else, but I always apply it in a very weak state, and used in this way any offensive odour is reduced to a minimum. Referring to manure-water, I have never been able yet to discover the utility of being particular as to the material employed, such as sheep droppings and the like, finding that made from horse manure and guano no way inferior, but in all cases I add some soot to it, which goes far to destroy any disagreeable smell, clarifies the liquid, and is objectionable to insects of every description. To keep down red spider on Fuchsias, as well as on other plants on which it will live, advantage should be taken of the early morning, or any other occasion when it is known that the structure will not be required for promenade, to apply the syringe freely; not a mere sprinkling, such as that given by a thoughtless operator, but a thorough wetting of the under surface of the leaves, where these minute pests as well as thrips are taught by instinct to lodge. With a like object in view, the garden engine should from time to time be brought into requisition, in order to reach the roof climbers thoroughly, bearing

in mind that one good washing is much more effectual than a dozen dewings. This is especially the case with Roses grown in such positions.

Lilies.—Where a good stock of such kinds as *L. eximium* and *L. auratum* that naturally bloom the earliest exist, they will be found very useful for many purposes, particularly the former, which from its less powerful odour may be used in larger numbers than the latter kinds.

Palms.—In addition to the varieties of Palms that succeed altogether in a greenhouse temperature, there are many that through the winter need a cool stove or intermediate house-warmth, which will for the next three months bear conservatory or greenhouse treatment; these, combined with Cycads, Encephalartos, Beaucarneas, Zamias, Dasylirions, Agaves, and Yuccas, the largest used as a background, the smaller and more feathery forms, intermixed with such blooming plants as may be available, will produce a good effect, although not so floriferous as earlier in the season.

Greenhouse.

Hard-wooded Plants.—There would appear to be a general disappearance of many of these beautiful and distinct plants from greenhouses and conservatories. For this the reason often assigned is the formal look which they have when trained, as seen on exhibition stages; but it should be remembered that when wanted for this purpose this is a necessity, and that when the same kinds of plants are only required for home decoration, such training is unnecessary. It is certainly necessary to keep in view the general habit of the plants, and when cultivated in pots in their early stages the principal shoots should be stopped sufficiently often, and the strongest branches tied out in a partially horizontal position towards the rim of the pot; this it is necessary to do, in order to prevent their getting bare and naked of foliage at the base as they get larger, and to counteract the disposition which these, in common with most other plants, have to spire up thinly when grown under glass. Were the numerous family of hard-wooded plants known in cultivation introduced in sufficient numbers to greenhouses and conservatories through the spring, and especially the summer and autumn months, for association with the comparatively few flowering subjects that now find favour with cultivators, these structures would not have the appearance that they now too often present, containing as they do little beyond the usual plants grown for effective leafage, intermixed with zonal Pelargoniums, Fuchsias, and the few other blooming plants that go to make up the general display. Amongst the plants that I would suggest for use in this way I should not recommend many of those concerning which there is more than ordinary difficulty as regards culture, either from inability to grow freely or a disposition to die off suddenly, particularly by those who have not had much experience in their growth.

The general stock that has been potted, as recommended through the spring, owing to the absence of sun and the consequent less necessity for the admission of a large amount of external air, will have had a more than usually favourable opportunity for the roots taking to the new soil; let them be placed where they will be fully exposed on all sides to light during the time when growth is being made, for both wood and foliage will be comparatively weak and soft. It is well to remember that the growing season this year, through the absence of genial spring weather, which, to a great extent, has an influence upon plants cultivated under glass, will be comparatively short, allowing much less than ordinary time for development and maturity; and it will be much better to be satisfied with a less summer's growth than to attempt by any over-excitement to make up for the later condition plants of all descriptions are in this season. This is especially the case with such hard-wooded species as naturally flower late in the spring or summer, and that do not make growth till after the blooming is over, which is quite a month later than usual. Summer-blooming Heaths particularly will be influenced in this way, and many of these will have not more than completed half their usual growth before the time comes for placing them out-of-doors. Concerning the yellow-flowered *E. Cavendishii*, one of the freest growers and most vigorous constitutioned of all Heaths, it is not generally known that it succeeds well with a little extra warmth whilst making its growth for some six weeks after blooming, treatment that would be fatal to the health of most Heaths; but if the flowers, immediately on their fading, be picked off, and the plants placed amongst growing Azaleas, where extra warmth is kept up by early closing the house and syringing the plants freely at the same time, as is the custom in the case of Azaleas, this Heath may be induced to make sufficient growth, and still have time for fully ripening the wood in a way that will induce it to flower satisfactorily every year, a result not attainable more than each alternate season under the ordinary system of management.

Cutting Back Heath.—The freer growing kinds of Heath, such as the plant just noticed, *E. affinis*, *E. ferruginea*, *E. Hartnelli*, *E. propendens*, most of the *ventricosas*, and others of similar habit, when they have been allowed to get too tall will bear shortening to one-third or one-half their size; and if the roots are abundant and in good condition, they will grow away freely afterwards, and by this means the lower portion of the plant will gradually become furnished with young shoots; but, as a matter of course, plants so treated must be kept in pits or houses for some time afterwards, and there should be no attempt to disturb their roots by potting however much they may be in want of this until autumn; all the freer-growing description will not only bear, but be considerably assisted by the use of weak clear manure water during the time they are making growth. I mention this, as I often find there is an impression that Heaths will not stand any liquid stimulant, which is a mistake; yet it may be necessary to caution the inexperienced that these, in common with all slow-growing subjects, will not bear its use in anything near so strong a state as grosser, quicker-growing plants, and it never should be given them, excepting if they have commenced shoot growth and during the time of its extension.

Chrysanthemums.—The time of putting these plants into the pots they will bloom in will, as a matter of course, be regulated by the time at which they were struck; such as grown from cuttings put in about the close of the year, and which will produce a greater profusion of fully-developed flowers than the later struck ones, will, as already advised, be ere this in their blooming pots, and all the later propagated ones should at once have their last shift, for if kept confined in little pots too long the certain consequence is the loss of the lower leaves and a hardened condition of the shoots, both of which it is not possible afterwards to set to rights. Leaf mould as a mixture with the soil is sometimes recommended for Chrysanthemums, but I have always found them when this has been employed have a greater disposition to make shoot growth than to flower freely. Good turfy loam, with a moderate addition of sifted rotten manure and sufficient sand, will grow them well, potting more firmly than they are sometimes treated to. As soon as they have got fairly hold of the soil stop the shoots so far as necessary, but not more, as this pinching is frequently carried much too far and resorted to too late, in which case it interferes with the blooming.—*F. BAINES.*

Hardy Fruit.

Any trees that are fruiting freely and which, on account of others being thin of fruit, must carry a heavy crop, should have assistance either in the way of manure water or, what would be better, considering this wet season, rich surface mulchings, or an occasional sprinkling of guano. From long observation, I have come to regard the application of such stimulants as doubly valuable when applied early in the season. As soon as the fruit has formed and is starting to swell in when they are most effective; after that period they are comparatively valueless—at all events as far as the present season's fruit is concerned. Judging by recent accounts, Pears generally are likely to be thin; though the bloom was profuse and apparently set well, the greater part has since fallen, owing to the long continued dull wet weather. At this place Pears on walls are bearing a fair crop, and there is a fair crop on standards, though many which were most promising a few weeks ago are now very thin, indeed, and the prolific trees will have to make up for the loss, aided as has just been indicated. The remarks lately made as to the extermination of aphides are still necessary. Cherries being more virulently attacked than I have known them to be for some years. Pears and Plums on walls now need to have all the breastwood cut back to within two, or at most three, joints of the old wood; but previously select all new growths that are to be laid in as permanent branches, and tie, nail, or fasten them back temporarily with small sticks; then remove all the strongest-growing shoots from every part of the tree, and complete the operation at an interval of a week, thus avoiding the check that must necessarily ensue were all cut off at once. Finish thinning out any clusters of fruit requiring it, and let all wall trees be washed with clear water to dislodge the fallen blossoms and cobwebs. The common spider is on too friendly terms with his relative the red spider to be allowed undisturbed possession of warm dry corners. What I mean is, that an attack of red spider is sometimes superinduced by the presence of ordinary cobwebs, which I have seen covered with red spider; therefore no quarter should be given to either of these pests. Strawberries are likely to be a heavy crop, and no time should be lost in keeping the fruit off the soil by a thin layer of straw; this we never require to do, our practice being to give a thick mulching of fresh stable litter early in May, and this by the time the fruit needs protection is washed clean by the rains. All varieties have grown so vigorously that small twigs to support the clusters of fruit will be almost a necessity, and certainly of immense service against the ravages of

slugs, which are very numerous, notwithstanding the late severe winter. Unless the predicted hot weather comes very soon, Vines in the open air will probably be a failure; for they are even now barely ready for stopping or pinching out the points in front of the "shows"; still, the same care should be exercised in their culture as if fruit prospects were ever so cheering. Disbud, stop, and train in new growth where such is required, as in the case of indoor Vines young canes produce the finest fruit, and provision should be made for the renewal of old ones, by occasionally training in new shoots to take their place at the winter pruning. The season will also be a short one for Figs, and the fruit will require all the aid that can be afforded in order to enable it to mature, such as exposure to full light and sunshine, by tying aside the leaves, and stopping all growth at the third or fourth joint, except those that are required to cover the wall. Such constant stopping not only represses growth, and induces fruitfulness, but aids materially the swelling of the fruit. Loosen or untie altogether as may be requisite the ligatures of grafts; as a rule, it will be safe to dispense with ties altogether, and the only attention now requisite will be to keep the stock free from shoots and suckers; these latter should be persistently removed from all fruit trees; this season they are more than usually numerous, owing no doubt to the excessive rainfall.—*W. W.*

TREES, SHRUBS, AND WOODLANDS.

STREET TREES.

THE very unpropitious weather experienced during the first five months of the present year, coupled with the extreme backwardness of the season, has not been all that could be desired for the well-being of newly planted trees in streets, and unless a favourable change follows, the wood now being made will not be sufficiently matured to withstand the influence of a severe and lengthened winter should such occur. I do not say the trees will die, but they will be less vigorous than under more genial circumstances. Of all works connected with the beautifying of towns, so far as the horticulturist is concerned, none requires more care and tact than street planting, in order that the result may be successful. The materials with which roadways are usually made being not only of bad quality for the purpose of planting, but often positively destructive to vegetation, it is perfectly useless in such cases to look for that healthy and vigorous growth so essential in street trees, unless they are planted in soil both suitable as regards quality and quantity. With regard to the selection of trees for towns, very little difference of opinion exists among those whose practical and lengthened experience render them most competent to give an opinion. The Plane is the kind generally planted; and very justly too, as few trees can bear comparison with it for beauty, vigour, durability, and smoke-resisting properties; it is, in fact, without doubt *par excellence* specially adapted for town planting. The Horse Chestnut planted alternately with Planes in some districts is, in my opinion, a great mistake. Why is it that we do not often see Poplars planted? there are many varieties of them, and most of them possess the characteristics which are necessary in a town tree. The Black Italian, for instance, produces dense foliage not liable to become prematurely affected by heat and dust, as is the case with Limes, Chestnuts, &c.; it is handsome in outline, and unsurpassed for vigorous growth. I am confident that for planting alternately with Planes no trees are more suitable, and planted alone as avenues, it would give greater satisfaction than many trees which are used for that purpose.

One evident source of failure in planting street trees is, in my opinion, the pent-up condition of the roots. In the majority of cases those who plant seem to think that it is sufficient to cut a small circular hole in the pavement just large enough to admit the roots to pass and to fix the guard. This is a great mistake, ultimately resulting in injury to the trees or killing them outright. Many large and well-established trees could be pointed out which have died in consequence of having the paving brought up close to their stems. The roots should have ample breathing-room, for which purpose the surface of the soil should be covered by gratings or encircled by tree guards; this not only allows of sufficient water being given when necessary, but also prevents the accumulation of deleterious gases beneath the pavement in dangerous proximity to the roots, and affords facilities for keeping the surface-soil in an open and healthy condition. Newly-planted trees should, in my opinion, be firmly staked to prevent the roots from being loosened in the soil; this is generally most carelessly done; in many instances no supports are placed to the trees, in others simply a collar is fixed to prevent injury by rubbing against the guards. As a consequence, some trees will be found to lean in the direction of the roadway, others towards the houses—effectually destroying the most desirable

results aimed at in planting avenues, namely, symmetry and regularity.

These matters though simple are so important, that no one planting street trees should neglect them. They add but little to the cost whilst the advantage gained is very great. Certainly it is far better to have twenty good trees than a hundred miserable ones. Let anyone examine the trees upon the Victoria Embankment, where the foregoing conditions have been rigidly observed, and ask himself whether the work has not been well repaid. There is no valid reason why success in other districts should not be achieved provided the same means are adopted. Fortunately the majority of the trees in this truly noble avenue are now able to support themselves without artificial aid, and it has therefore been wisely resolved not to subject them to the severe pruning rendered necessary during the past few years. The appearance of the trees as a consequence is much improved, and they now bid fair to assume those natural proportions so much admired in well-grown Planes.

Southwark Park.

CHARLES DENNIS.

FERTILISATION OF THE ARAUCARIA.

In the "Revue Horticole" for 1878 (p. 443) an account was given of the experiments made by M. Hauguel on the fertilisation of certain specimens of the *Araucaria imbricata* in the department of the

members of the same genus; for instance, amongst the Pines, while all those belonging to the *Strobilus* section open in the autumn, or even at the end of the summer of the second year, it is not a rare occurrence amongst those belonging to the *Pinaster* and the *Pseudostrobus* section to see their ligneous cones remaining on the tree for an indefinite period. From these facts it results that the epithets "annual and biennial maturity" are misnomers, generally speaking, and can only be applied in a very few cases. If, instead of taking into account the duration of fruit on the tree, we confine ourselves to taking account of the time which elapses between the fecundation and the ripening of the seed, we shall find ourselves almost inclined to think that the whole of these species are annual.

What has hitherto deceived most observers is that there are many species in which the cones do not reach the adult stage until long after they have made their appearance on the tree; there is, however, an easy method of determining the arrival of this period by watching for the dissemination of the pollen. As shown in the figure, the male catkins of the *Araucaria imbricata* make their appearance early in the spring; the pollen, which is very abundant, escaping in the month of June, at the period when the cones, which by that time have gained a considerable size, open their scales and expose the ovules, which thus become impregnated with pollen. From this epoch, three months are sufficient for the seed to become ripe and fit for reproduction. Amongst purely annual plants we may mention those of the *Abies*, the *Yew*, and the *Ginkgo*. E. A. CARRIÈRE.

RHODODENDRONS.

ALTHOUGH the wet, sunless weather which we have had up to the middle of June has been anything but favourable for most plants, Rhododendrons have benefited greatly by it, the cool, moist state of the atmosphere admitting of a gradual swelling of the buds, which have now opened most satisfactorily. Seeing that Rhododendrons will grow nearly as freely as Laurels, and that they are even harder, the wonder is that they are not planted to a greater extent than they are, for besides the magnificent trusses of bloom which they bear, they are equal to any evergreen as a blind, or for ornamental purposes in pleasure grounds, where, if judiciously grouped and backed up with Hollies, so as to ward off strong winds when in flower, they may be made to form quite a feature. I know that many entertain a notion that Rhododendrons will not succeed without peat, but that is a mistake, for there are some soils in which they do quite as well or even better than in peat, provided they can get moisture enough. A friable loam containing a good deal of sharp grit suits them admirably if it is fresh and has not been under cultivation, and if they can have this and a moderate amount of shade they will flourish anywhere, except in places where there is calcareous matter. This they dislike, and therefore where chalk abounds it is useless attempting their cultivation, unless special preparations are made before planting by excavating large holes, and filling them with soil more congenial to them. As their roots do not spread much, they only require a moderate depth in which to grow, but a mistake into which many fall in filling beds is having them too high, thereby thinking to produce an immediate effect, instead of which the plants, under such circumstances, are incapable of making any progress and dwindle away and die. Rather than have the surface above the general level it should be below it, as then they get the benefit of what rain falls, whereas where the beds are elevated it is mostly lost from draining off to the sides, where it soaks in out of their reach. Some few years ago a collection of Rhododendrons was nearly killed through having been planted in this manner, but after being lowered the plants quite recovered, and are now as healthy and floriferous as it is possible for Rhododendrons to be. The soil in which these are growing looked more like gravel than anything else, so full is it of small stones and sand; and yet in this where many would hardly expect a Laurel to succeed Rhododendrons are found to luxuriate. True, they do not make quite so much wood as they often do in peat, but that is an advantage, except in cases where it is desired to get them to a large size quickly, as they grow more compact and always set a great quantity of buds.

Parings and trimmings from roadsides answer capitally for Rhododendrons, and if to this is added about half its bulk of thoroughly decomposed leaf-mould, no mixture or soil that can be got will suit them better. Where only single plants are wanted, it is a good plan to dig holes that will each hold about a couple of barrowloads of this material, to which, unless the surrounding ground be congenial, the roots will confine themselves and form a compact ball that after a time may be lifted entire. I once had some seedlings planted out in a quarter of the garden in narrow trenches which had been prepared for them; these plants could be pulled up holding together in one long string, and they had to be chopped through in order to separate them—a fact which shows how much they confine themselves to any particular soil which they like, and how they avoid any



Male catkins of the *Araucaria imbricata* (one-quarter of their natural size).

Seine-Inferieure, which gives ample information as to the time which is necessary for the seeds of these trees to become perfectly ripe, starting from the day of fertilisation. It was then stated that in the case of *Araucaria imbricata* the period was three months. All the treatises which speak of this species state, with regard to its fruit, that its maturation is biennial. These two statements, which are apparently at variance with each other, apply equally to most of the genera of the Conifers, if not to all of them. The difference between them has struck several of our readers, some of whom having written to us on the subject, we only think it right to give a few explanations on the matter. These explanations are all the more necessary, seeing that there is an important point connected with the question which has hitherto been too much neglected from a practical point of view. The difference in these statements simply arises from confounding together two very different things, that is to say, the fecundation of the fruit with the duration of its persistence on the tree. In any case, it is totally illogical to say annual or biennial maturity, because some of the cones do not remain on the tree even for a year, while others hang on their native twigs for four, eight, fifteen years, and even more. Thus, while the fruit of the *Yew*, the *Cephalotaxus*, and the *Abies*, fall as soon as they come to maturity, and those of the *Tsuga*, the *Biota*, and the *Cedar* fall at an interval of from fifteen months to three years, there are others which resist the tendency to fall almost for an indefinite period, such as the *Cypress* and the *Frenela*. We also find a great difference in the

that has been long under cultivation. What there is in this they object to I know not, but certain it is they are never found to thrive in it, and yet they are fond of manure when used as a mulching, in which way it answers the double purpose of acting as a stimulant and keeping the ground shaded and the roots cool and moist. This is half the battle in growing Rhododendrons, for if they suffer at this time of year from want of water, the young shoots are checked in their progress and become so stunted as to be unable to set their flower-buds. Although Rhododendrons are naturally moisture-loving subjects, a wet, stagnant condition of the soil soon throws them out of health, yet they are just at home by the sides of running streams or in positions where water can drain freely away from them. As an under shrub in game covers, the common *R. ponticum* is unsurpassed, as neither rabbits nor hares will touch it, however short of food they may be, and, being of a spreading habit, it just suits pheasants to hide under. Fallen leaves in a state of decay that always abound in woods make the surface-soil exactly suited to the wants of Rhododendrons, and *R. ponticum* being less particular than choicer varieties may be planted with certainty of success even without such vegetable deposits. S. D.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS.

Laurels in Kensington Gardens.—We notice with pleasure that a great number of Laurels have been cleared away from under the group of varied Ash trees in Kensington Gardens. A great deal of harm is often done in such cases by useless and monotonous underwood, which crowds and robs the trees that one really wants to develop, and is in itself, especially in a public park, of no use whatever. Kensington Gardens should always be as they are now—the home of fine trees, and everything which interferes with their freedom and health should be removed.

Some New, or Little-known Willows.—Dr. Carl Bolle ("Berliner Monatschrift") directs attention to the merits of *Salix uralensis*, *S. rosmarinifolia*, and *S. rigida pendula*. The last he states is a noble and handsome novelty, and a valuable addition to our choice of Weeping Willows. It was accidentally discovered amongst a number of cuttings of typical *S. rigida*, creeping along on the ground instead of growing erect, and the happy finder, Mr. Joseph Wrede, lost no time in grafting it on stems of *Salix pyramidalis*. This happened four or five years ago, and the results have exceeded expectations, the new Weeping Willow being only of moderately strong growth, and therefore suitable for small gardens. *S. rosmarinifolia* is of course better known; but, as Mr. Bolle observes, it is much rarer than it ought to be. It certainly is one of the handsomest, if not the handsomest, species of a genus rich in beautiful forms. Its proper name is *S. incana*. *S. uralensis* is described as a very useful Willow on account of the pliability and toughness of its slender branches, which are suitable for the finest basket-work. Professor Koch refers to this in his "Dendrologie" as a variety of *S. helix*.—"Gardeners' Chronicle."

Rabbit-proof Trees.—I was much surprised to see the Laburnum mentioned by "M. C. D." (p. 416) as a tree that was rabbit-proof or nearly so. In a well-known botanical work it is stated that hares and rabbits are so "extremely fond of the Laburnum bark, that they will eat no other tree so long as they can get a supply of it." I would not say that they will leave everything else for it, but my experience is that they are extremely fond of the Laburnum, and I believe it is sometimes planted or sown extensively in woods for the very purpose of diverting rabbits from other trees. I think they are, next to the Laburnum, fondest of Hollies, young plantations of which they destroy wholesale. On one estate, where a nurseryman had planted the different varieties of Hollies upon an extensive scale on the ornamental "massing system," the rabbits which swarmed in the park had not been reckoned upon, and in one year they nearly ruined every plant. *Cupressus Lawsoniana* is eaten up by them here during hard winters as far as they can reach. —J. S. W.

The Late Dr. Moore.—We omitted last week to mention that a portrait of Dr. Moore was given in THE GARDEN (Vol. XIII.). The following concerning him is taken from the "Irish Farmer's Gazette": "On the present occasion we have neither the spirits nor the inclination to allude to Dr. Moore's long and useful public career. Sorrow for loss of a long known and greatly valued friend, and sincerest sympathy for his family in their sore bereavement, forbid any effort in that direction. We cannot, however, conclude without expressing a hope that the heads of the Department of Science and Art may see their way to selecting as his successor his eldest son, Mr. F. Moore, the present Curator of our University Botanic Garden. The appointment would be a popular one."

The Late H. Noel Humphreys.—In "The Times" of Saturday we briefly recorded the decease of a distinguished naturalist and archaeologist, Mr. Henry Noel Humphreys, which occurred at the close of last week at his residence in Westbourne Square, Hyde Park. A son of the late Mr. James Humphreys, of Birmingham, he was born in the Midland metropolis in 1809 or of the following year, and received his early education at King Edward's School, Birmingham. Having spent some time in artistic studies in Italy, he published his first work, consisting of illustrations of Mr. W. B. Cooke's scenery of Rome and its neighbourhood. His next work, which bears date 1840, entitled "British Butterflies and their Transformations," he published in partnership with Mr. J. O. Westwood. This was followed by a similar work on "British Moths" three years subsequently. Among his most important works of an archaeological character between this date and 1856 may be specified "Illustrations of Froissart's Chronicles," "The Parables of Our Lord Illustrated," "The Coins of England," "Ancient Coins and Medals," "The Illuminated Books of the Medieval Period," the "Coin Collector's Manual," the "Coinage of the British Empire," "Stories by an Archaeologist," and especially his *magna opera*, so to speak, "The Art of Illumination," and "The History of the Art of Writing from the Hieroglyphic Period down to the Introduction of Alphabets." Mr. Humphreys has contributed to lighter literature at all events one dramatic novelette, called "Goethe in Strasbourg," and he was a frequent contributor to the "Gentleman's Magazine," and to "Once a Week" in its palmy days, on subjects connected with his zoological and antiquarian researches.—"Times," June 16.

ANSWERS TO CORRESPONDENTS.

Culture of the Azorean Forget-me-not.—I should be glad to know what is the proper treatment of *Myosotis azorica* so as to induce it to flower freely. Some plants which were sown in July last are still without flowers. Is it a biennial or perennial?—A. B. (This species is a perennial, though during severe winters it is frequently destroyed when unprotected out-of-doors. It succeeds best in rather shaded situations, and delights in a moist rich soil, where it flowers freely and continuously throughout the summer, and if the plants in question are treated about as they will thrive. If grown in a dry border it is subject to attacks of mildew, which prevents it from flowering, and ultimately kills it.—W. G.)

Tall Pears.—I sowed Wheeler's First Early Pears in pots the first week in January, and planted them out in the end of February on a west wall border, and at the present time they are 7 ft. high and one mass of bloom. They look, too, as if they were capable of growing another 2 ft. or 3 ft. Nothing was dug in the ground except a small quantity of rotten stable manure, but the soil largely consists of loam sweepings. Wheeler's First Early is reported to grow 2½ ft.—R. G. (Pears everywhere have grown unusually tall this year, so much so in many places as to need toping.)

Pear Tree Insects.—D. S.—Not red spider, which belongs to the mite family, but a scale blight or cocoon, in that state where the dead bodies of the females are covering a multitude of eggs, some of which are just hatching. Let the scale be destroyed as soon as possible by washing the branches with a strong mixture of soft soap and soot.—W. W. S.

Black Spot on Pears.—I am very much troubled with a little black spot on my Pears; the sort has very little to do with it. By-and-by, as the fruits enlarge, so do the spots, and then cracks come on the surface and decay begins. Is it a fungus, and will sulphur stop it? What is the cause of it?—JOHN MARTEN, Chatham. (The black spot on the Pears sent is due to the presence of a dusky fungus named *Cladosporium dendriticum* (commonly quoted as *Helminthosporium pyrenum*). The cracks on the fruit as mentioned are said to be caused by the presence of the fungus. We know no cure.)

Seedling Aquilegia.—F. M. E.—The specimen sent is certainly handsome and the colours distinct, but it too nearly resembles the hybrids that are raised between *A. curvifolia* and *A. chrysantha*, and which are now becoming common in collections to be suitable for the purpose you suggest.

Rhododendron Hardyum.—In reference to my question (p. 488) I may state that I have both *R. hardyanum* and *Blandyanum*. The flower of *Hardyanum* is nearly the same as that of *R. blandyanum*, but a shade lighter crimson. The leaf of *Blandyanum* is smaller and very distinct.—W. A. SMITH, Broughton Bank, Manchester.

Names of Plants.—W. A. S.—1, *Coccoloba pterocarpa*; 2, plants cannot be named with certainty from leaves only. *C. M.*—*Paulownia imperialis*. *T. P.*—Apparently *Medicago maculata*; send Orchids when in flower. *C.*—*Chrysanthemum frutescens*. *St. L. B.*—Some *Philadelphus*. *M. C.*—Apparently *Magnolia Leneei*. *C. E. O.*—*Odontoglossum maculatum*. *C. J. L.*—*Staphylea pinnata*. *H. M.*—*ped. grandiflora*. *J. Mc.*—5, *Ecochorda grandiflora*; 6, *Centaurea montana*; 7, *Hieracium aurantiacum*; others next week. *G. T.*—1, *Saxifraga hypnoides* var.; 2, *Sedum albescens*; 3, *S. reflexum*; 4, *S. Selskianum*. *Cottager*.—*Philadelphus coronarius*.

Diseased Grapes.—There is no cankerous growth in the Grapes sent; the cuticle is somewhat cracked and discoloured, but beyond that we do not think the berries are affected.

Questions.

Tuberoses.—Kindly give me a little advice about these. I procured my bulbs in September; since then they have been standing in a temperature of 75° (my Vinery), planted three in a pot. They are not coming to thrive, and are much infested with green fly. What am I to do?—M. J. F.

Conservatory Beds.—I am building a conservatory 55 ft. long and 30 ft. wide with an entrance porch 15 ft. square. I have three Camellias to plant in it, each 10 ft. high and 10 ft. in diameter; I dislike the plan of a square bed in centre for them. Would some of your correspondents kindly give advice as to the internal arrangement of the space, with ideas of how it may be broken up into beds for flowers or Ferns?—BALLATH BERRY.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

NOTES ON SPANISH NARCISSI.

DURING the latter part of April and early part of May, in company with the Rev. H. H. Crewe, I made a botanical tour through Spain and Minorca, and as we met with many species of Narcissi, I think a few notes on their distribution may be acceptable to the readers of THE GARDEN.

We entered Spain by way of Bordeaux and Biarritz. Our first Narcissus was a large sulphur-coloured Corbularia, observed by the side of the railway between Dax and Bayonne in passing through the Pine forests of the Landes. This is probably the most northern point to which the genus Corbularia reaches. In the neighbourhood of Biarritz the same form is still more abundant, being widely distributed as isolated patches in the moist heathy hollows; it is probably a variety of the old garden Corbularia Bulbocodium, though much paler in colour. The variation both in size and colour of the Corbularias met with in the north and centre of Spain was most perplexing, and raised the doubt as to the extent to which separate specific rank should be assigned. The extreme forms, both as regards colour and size, were apparently most distinct, but the intermediate gradations so numerous and ill-defined that in the majority of cases we dared not assign a specific name. The variations, however, were not gradually intermixed, and, as a rule, where two forms were associated, they were not those most nearly allied and not intermingled, but occurring as separate patches. Mr. Llewellyn informs me that the Biarritz sulphur-coloured form occurs also in great abundance about Bagnères de Bigorre, in the Pyrenees, and we again found it abundantly on the hills to the north-west of Pancorbo, at a height of from 2500 ft. to 3000 ft. It was slightly smaller and darker than the Biarritz plant, but still much paler than the Corbularia Bulbocodium of gardens.

At Pancorbo we also found a lovely little Narcissus which we could not distinguish from *N. minimus* of gardens. A night journey from Pancorbo to Palencia precluded observations in the intermediate district, but midway between Palencia and Leon the moist meadows were golden-yellow with a small orange Corbularia, and this extended for fully forty miles with scarcely an interruption to the village of Busdongo, near the Puerto de Pajares, the pass over the Asturias, ranging from a height of 2500 feet to nearly 4000 feet above the sea. We observed no other Narcissus in the northern descent of the Asturias till we approached the bottom of the pass, where, about six miles to the north of Pola de Lena, the rocks above the road were adorned with a pale cream-coloured Narcissus, one of the numerous forms of *N. triandrus*, probably *N. calathinus*. This appeared at short intervals in some neighbouring localities. North of Oviedo the moist meadows by the side of the railway were bright with a large, pale straw-coloured Corbularia, somewhat paler than the Biarritz form, but scarcely distinct enough to separate as a species.

The golden-yellow form, so abundant and continuous on the north side of the Asturias, was here absent, but in a meadow near Gijón, on the coast, we found two or three specimens agreeing with it in colour, but exceptionally large; in the same meadow *Narcissus biflorus* was abundant. The pale *Narcissus triandrus* (? *calathinus*) was again abundant

in the neighbourhood of Gijón, and was observed in several localities on dry rocks near Varina, west of the town. Cultivators should bear in mind that *Narcissus triandrus* and its allies like dry, rocky locations, whilst the Corbularia almost invariably occur in wet places—so wet where we found them in the north of Spain, that they were troublesome to dig up, bespattering the collector with mud.

From Leon to the northern slopes of the Sierra de Guadarrama our journey was by night. We passed Avila in the early morning, and soon after crossing the watershed of the Guadarrama, at a height of about 4400 feet, separating the basins of the Douro and the Tagus, the Alpine meadows near the station of Naval Grande were speckled with the tiny yellow Corbularia nivalis; this also occurred at intervals between Naval Grande and Naval Peral; but at the latter place it was larger than the typical form, and was here and there intermixed with a large form which differs little from the old Corbularia Bulbocodium in cultivation.

At Naval Peral a pale straw-coloured Corbularia (probably *C. Graelsi*) set in, occurring as separate patches and on rather dryer ground than *C. nivalis*, and continued at intervals all the way to El Escorial, and in moist meadows south of El Escorial, half way to Madrid. The specimens we obtained were somewhat darker in colour than those received from Professor Graels in 1876.

On dry rocks between Naval Peral and El Escorial the beautiful *Narcissus pallidulus* (a pale variety of *Narcissus triandrus*) commenced and continued at intervals along the line half way from El Escorial to Madrid; we also found it abundantly above El Escorial, up to an altitude of 3500 ft.

Narcissus rupicola, allied to *N. juncifolius*, was extremely abundant about the lowest projecting rocks north-west of El Escorial. I also obtained it sparingly in 1871 in the neighbouring Sierra d'Avila, at a height of between 4000 ft. and 5000 ft., but it does not appear to be so widely distributed in this region as the Corbularias and *Narcissus pallidulus*, which are so extremely abundant, as to form one of the most conspicuous floral features of the district.

South of Madrid we observed no more Narcissi till we reached the island of Minorca, where we obtained *Narcissus serotinus* in leaf. This also occurs abundantly in Majorca, where I found it in flower in October, 1876. We observed also in Minorca, rather plentifully, a variety of *Narcissus Tazetta*, just out of flower, which is said to differ from the typical form.

GEORGE MAW, F.L.S.

Violas and Pansies.—All the so-called Violas now grown for bedding purposes are garden hybrids, and may be called Violas or Pansies just as it suits the taste of the grower. Practically there is little or nothing left now to distinguish the bedding Viola from the bedding Pansy, and although anyone well acquainted with the different kinds could probably distinguish them, it would be exceedingly difficult to make their differences apparent in print. To prevent further misapprehension and mistakes in the future, I think it would be wise to distinguish all bedding kinds as bedding Pansies, leaving the term Viola to be applied solely to species such as *cornuta*, *lutea*, *stricta*, &c. That most if not all of the largest flowered kinds of these Violas have been bred from contact with Pansies there can be little doubt. I know that my first break from Perfection was produced in that way, and it is most probable that insects have done much as regards crossing. We have show or English Pansies, fancy or Belgian Pansies, and a class of bedding Pansies would include all others worth naming. As to the award at the Manchester show, it was evident that bedding kinds only should have been invited, and then the judges should have decided upon their merits just as the plants presented suitable bedding features; but as in this class Mr. Hooper was the only exhibitor, there was nothing over which to raise discussion. In reality all these things can only be judged when planted out in quantity, and then it is rarely that large flowered kinds prove the most effective. A dwarf, spreading habit,

medium-sized flowers of some good colour produced in great abundance and for a long period, are the best characteristics of a bedding Pansy.—A. D.

—Mr. Williams (p. 493) is mistaken when he states, that *Viola* *The Tory* was bred from a Pansy, i.e., *Viola* tricolor. Its seed parent was *V. cornuta* Perfection, as which was also that of Alpha, Advancer, rubra-lilacina, and White Perfection. I fear "Brockhurst's" suggestion (p. 493) will not answer if the eye is to be his only guide. I have a number of varieties raised from *V. stricta* without even a single line or ray from the eye.—JAMES GRIEVE, *Pilrig Cottage, Pilrig Street, Edinburgh*.

Sempervivums.—In the account of the rockery at St. Alban's Court (p. 492) a Sempervivum is described as a "variety of arachnoideum, with a good deal of red on the rosettes." This is doubtless *S. Pomelli*, a very handsome species, distinguished from arachnoideum by having the tuft of wool at the point of each leaf distinct and not co-mingled as in the latter. As may be expected, there is much confusion among the Sempervivums.—THOS. WILLIAMS, *Ormskirk*.

Hoteia japonica for Edging Beds.—This useful plant, so largely grown for forcing, makes a beautiful permanent edging for large beds, its foliage being so ornamental, that even without its feathery spikes of white flowers it is effective and fresh looking. We have at present hundreds of clumps of this plant, all of which appear to enjoy the abundance of moisture we are experiencing this season.—J. GROOM, *Linton Park, Maidstone*.

Gigantic Poppies.—Mr. Stevens' Poppies, noticed in THE GARDEN (p. 497), are, doubtless, what are known and sold as *Fa-paver involucreum maximum*. This has enormous flowers, a clump of which may be seen a mile off. It will grow anywhere. I have in view now a plant with about thirty of its enormous buds ready to open. This plant is confounded with *P. bracteatum*, a flower with a deep crimson colour, having a solitary bract just under the bloom.—THOS. WILLIAMS, *Ormskirk*.

Myosotis Weirleigh Surprise.—This is the name of the blue and white striped Forget-me-not which your correspondent saw at Mr. Cannell's (p. 496). We have a good deal of it here, and exhibited a large pan of it amongst our plants at the Manchester show, where it was much admired. It is, I believe, a sport from *M. alpestris*, and grows as freely and flowers as profusely as that variety. It is beautiful, especially for bouquets. I am told that it does not come true from seed, but it is easily propagated by division and cuttings.—BROCKHURST.

Aquilegia chrysantha.—This plant's liking for a moist spot has been clearly shown this season. A strong specimen of it planted along with a number of similar plants in a waterside bed, the surface of which is only about 4 in. higher than the level of the water, is now in the most vigorous health. It has thrown up about twenty stems, and its flowers, notwithstanding the very backward character of the season generally, are now just on the point of opening; while a number of smaller plants on a warm and drier spot have all, with one or two exceptions, been killed by the winter frost.—T. SMITH, *Neury*.

Tropæolums in Plant Baskets.—We have a good many flower beds made in the form of baskets, their outer edges and handles being clothed with Ivy. I find Tropæolums very effective trained over the handles and allowed to ming with the Ivy. Having a quantity of very tall scarlet Tropæolums, we planted them early under the shelter of the Ivy, and they now form most brilliant and striking masses of colour. I may add that these Ivy baskets, well filled with brilliant-flowered plants, the edge being fringed with trailers, make pretty objects in the flower garden.—J. GROOM, *Linton Park, Maidstone*.

Phormium tenax.—A large specimen of this, planted near water, though quite killed to the ground, is now shooting up strongly again, and some of the first leaves are already 2 ft. high. On the other hand, a small plant of the variegated New Zealand Flax planted near the one just alluded to, but on a little mound raised about 1 ft. above the water, and which had not its leaves killed, is only just showing signs of new growth. Let us hope that the above may be the present condition of many of the plants reported to be killed. I should add that I saw a few days ago a strong specimen of the green-leaved sort, which has been growing for several years in the forecourt of some schools at Dundalk—a bleak spot in which scarcely any shrub or tree will thrive—quite uninjured by the frost in any way.—T. SMITH, *Neury*.

Watering Bedding Plants.—At this season, when every owner of a garden is having more or less planting done, it is by no means uncommon to find much unnecessary labour bestowed on watering. Of course in the case of very small plants that have been

shaken out or much disturbed in removal, watering is absolutely necessary, in order to keep the soil sufficiently moist to prevent their drying up before their roots get established, but as long as they will hold up or keep from flagging they root much quicker if kept free from the chilling influence of doses of cold water. During the late exceptionally wet period I have observed that plants in beds and borders that are overshadowed and partly impoverished by the roots of large trees, and therefore the first to suffer in periods of drought, have this season made far more progress than those in open and usually more favourably situated beds, simply because the latter have been saturated and chilled with heavy rains.—J. GROOM.

Evening Primroses in the Wild Garden.—The annexed illustration is an attempt to show the right effect of a colony of the large Evening Primrose naturalised on the margin of a wood. These noble and delicately-scented flowers are very easily grown and very beautiful in any position. They, however, from their height and boldness, and the freedom with which they grow in almost any soil, are peculiarly suited for the wild garden, for shrubberies, copses, and the like, sowing themselves freely. In this case they are apt to become eventually somewhat too numerous and somewhat "starved," so that where confined to large groups in good ground they are best. In any flower garden not confined to flat beds only, a small isolated bed of these *Oenotheras* looks well. Such may be seen in the Emperor of Austria's garden at Laxenburg—this being a favourite flower there. It tells very well in the evenings in these beds—4 ft. wide—on the turf, near the margin of a shrubbery, or near groups of specimens on the Grass.—V.

VEGETABLE CULTURE FOR MARKET.

CUCUMBERS IN PITS AND FRAMES.—During summer the long ranges of pits and frames in market gardens devoted to winter to the protection of tender culinary plants are applied to Cucumber culture, and from these are cut thousands of fruits weekly. Indeed, few frame crops pay better than Cucumbers where they succeed well, and therefore every frame that can possibly be spared is planted with them. One grower at Fulham has a field of frame-ground, containing many ranges of frames with from 800 to 1000 ordinary sashes, in summer entirely devoted to Cucumbers. From this field are sent to market weekly during the summer from 200 to 220 dozen fruits. The Telegraph, and varieties of it, are much grown in frames; so is the Syn House, Pettie's, Rabley, Duke of Edinburgh, Sutton's Perfection, and a few others. Two or three men are usually kept at work in these frame grounds, and on three days of the week (Monday, Wednesday, and Friday) they are employed in cutting fruits for market, and on the other three week-days they are busy stopping and regulating the shoots of the Cucumbers, watering, &c. Should any young fruits exhibit a tendency to become crooked, they put them into cylindrical glasses open at both ends. These glasses are about 12 in. or 15 in. long, and 1½ in. or 2 in. in diameter, and several thousands of them are employed in one large frame-ground, as one good and straight Cucumber is worth nearly a dozen small and deformed ones. The crooked ones are disposed of for pickling. Should any "nosed" fruits, as they are termed, or such as have swelled at the point, be found, which occurs late in the season, a piece of string is tied round them, and they are left to ripen, as such fruits are certain to contain good seed. When the seed fruits become yellow and are cut, they are placed under sashes or on boards exposed to the sun, so as to get thoroughly ripe and hard before being separated from the pulp. The first sowing to supply plants for growing in frames is made in little punnets or flower-pots, early in the year, which are placed in hot manure frames. When the seeds germinate and are fit for potting off, two plants are potted into a 6-in. pot, and the whole replaced in the frames, keeping them near the glass. As soon as the frames to be planted can be spared, they are moved aside, and trenches cast out 5 ft. wide and 2 ft. deep, and firmly filled with stable litter. Over this some soil is placed, and the frames set on again. Another sowing is

generally made to succeed the first one; but, as a rule, there are seldom more than two sowings made, and the second is only sown because all the frames are not empty at one time to be filled by the first sowing. When the heat is at a proper temperature for planting, a little more soil is introduced to the frames, and one potful (containing two plants) is planted under each sash, and one of the plants is trained towards the front of the frame and the other towards the back. The sashes are then put on and all is kept for a few days, and, if need be, a little shading is also given by strewing some litter over the glass.

Afterwards, until the plants have fairly begun to grow, no more ventilation is given than is necessary to prevent scorching in the case of bright sunshine. For several weeks after having been planted they are covered up at night with litter, removing it next morning; indeed, this covering is not discontinued until the month of June. When the plants have grown sufficiently to come into bloom, they are most attentively looked after in the way of regulating the growths, pegging them down, and stopping the lateral shoots at the joint beyond the embryo fruit, and preventing an accumulation of superfluous growths. Throughout the day they are allowed to have plenty of air during the summer, but it is all taken off at night; in the morning the sashes are tilted up a little, and as the heat of the day increases the sashes are still further opened.

Water is given in the morning abundantly to those requiring it, whilst those that are not dry have simply a sprinkling overhead. It is cold water from the tap that is entirely used, and doubtless this is the greatest drawback to Cucumber growing with which the market gardener has to contend, as where one or several acres are covered with frames, it would be almost an impossibility to make tepid all the water that would be required. Large hogsheads, however, are sunk here and there about the frame-ground, and brick or cement tanks are frequently used for containing water, with which they are filled for the next day's use. Guano-water is sometimes given during the summer time, being applied through a fine rose overhead. This application is not only useful as a stimulant, but when given overhead has been found to be of material benefit in destroying or preventing red spider, as well as

invigorating old plants. In reference to woodlice, toads are put in the frames to destroy them. Cucumbers require sunny weather to set well, and in dull wet seasons they do not thrive well, especially in the earlier part of the year. Should the summer be hot and bright, the sashes are shaded a little, and this is done by strewing some rank litter over the glass; but many market gardeners, by way of economy of labour, paint the sashes with whitening. By August the plants are getting exhausted; therefore careful attention is paid to thinning out old and bare Vines, and encouraging young wood by means

of stimulants, in the way of manure-water and coverings from cold; and in this way they last till September. No fruits are saved for seed until August, for if left sooner they would materially weaken the crop of marketable fruit. Until August Cucumbers are liable to red spider, thrips, green fly, mildew, canker, and various other diseases; the only remedy being that of keeping the plants in as vigorous growth as possible. When mildew attacks the Cucumber it is generally the result of insufficient ventilation and too low a temperature. When it does appear, dusting thinly but evenly with flour of sulphur through a piece of muslin cloth is the only cure. Thrips are the most terrible of the insect enemies which attack the Cucumber; for these, and also for green fly, which is sometimes troublesome on the young growths, fumigating with Tobacco is usually resorted to; but the foliage of the Cucumber is so tender, especially when forced, that fumigation, unless done very carefully, is a cure which is often worse than the disease, and should never be attempted by the inexperienced. For these pests, and also for red spider, it

will generally be found best to apply the "Antidote for Red Spider, Thrips, and Green Fly," by putting a small quantity in the water with which the plants are syringed. This will, if persevered in, obviate the necessity of fumigation, and keep the foliage fresh and green. Canker in the stems may be stopped by filling up the fissures with quicklime.

CUCUMBERS IN THE OPEN AIR.—Market gardeners in the neighbourhood of London grow but few Cucumbers in the open air. Many have attempted it, but most of them have now abandoned it, the result not having proved very satisfactory. Where, however, it is carried on, they are grown



Night effect of Large-flowered Evening Primrose in the Wild Garden.

under glass and hardened off and planted out 6 ft. asunder and 10 ft. row from row, and hand-glasses are put over them. When they begin to grow the ground is well mulched with straw, to keep the earth moist and the fruit clean. Due attention is paid to their after-culture in the way of stopping, thinning, &c., and in some cases fairly good results are obtained. Under any circumstances Cucumbers form an uncertain crop in open fields; but while their produce is in such demand in all large towns, their culture, where they will succeed with tolerable certainty, will no doubt still be largely carried on. In one or two counties, the soil and climate of which seem unusually well adapted to their growth, large quantities are grown in the open air for the London markets; from such sources there are said to be sent to London not less than 600 tons a week during what is termed the Cucumber season. Of these upwards of 100 tons have been known to be sent to Covent Garden in a single day. What an acre of Cucumbers realises in the way of money is uncertain; but they are stated to yield a good profit to the grower even if he should get no more than 1d. or 2d. a dozen for them. At these prices sums varying from £20 to £60 per acre, according to the season, are said to have been obtained for them. In good Cucumber-growing localities, the seed is sown about the beginning of May, where the plants are intended to grow, in rows some 4 ft. apart, and the plants stand nearly 2 ft. asunder in the row. In favourable seasons they soon push into active growth and cover the ground with vines, which, during the latter end of May, the whole of June, and beginning of July, spread in all directions and come into bearing. During their growth, weeding and thinning their superfluous shoots are well attended to, and if the plants should not entirely cover the ground, or wherever blanks occur, Mangold Wurtzel is planted in the vacant spaces. About 4 yds. apart are also rows of Onions, set early in the spring, which, being allowed to run to seed, serve in some measure both for shade and shelter. Where Onions are not used for this purpose, Rye, sown in the autumn, 4 yds. or 5 yds. apart, and cut as soon as the vines cover the ground, is employed instead; Peas are also sometimes used for the same purpose. In this way the ground is made to produce two or three kinds of crops at the same time, and if one should happen to fail, one or more of the others, as the case may be, take its place. By the middle of July or earlier, according to the season, the crop is ready for a first gathering, and from that time to the end of September fruit varying in length from 10 in. to 12 in., green and solid, though sometimes unshapely, is continually being cut, sometimes to the extent of three tons at a time, and that from little more than as many acres. When gathered the fruits are sorted, the best being sent to London, second-rate kinds to the provincial markets, and what are small, crooked, or discoloured are given to pigs. Ripe ones are saved for seed, so that little or no waste is ever experienced with crops of this kind. The baskets in which Cucumbers are sent to market are called "pads." In shape they are square, with hinged lids, and they hold about two bushels.

GHERKINS.—These are extensively cultivated in London market gardens, some growers frequently gathering from 18,000 to 20,000 fruit in one day. The seed is sown in May in rows where the plants are to remain in well manured land. The rows are usually about 9 ft. apart, and the plants, which are thinned out when sufficiently advanced to admit of the strongest being discerned and left, are allowed to stand 6 ft. apart in the rows. The after treatment is exactly the same as that practised in the case of outdoor Cucumbers, except that the shoots of the Gherkins are allowed to grow unpinched. The fruit is gathered when about the size of a man's finger, placed in bushel baskets, and sent direct to the pickle manu-

facturers. A good place for Gherkins, and one often devoted to them, is the alleys between the rows of spring-sown Cabbages or Radish beds. The alleys are dug over, the drills for the seeds opened in the morning, and the seeds are sown in the afternoon when the ground is warm. When the Radishes or other crops are cleared off the intervening beds, the latter are dug, and a line of Cauliflowers or French Beans is planted along the centre of them, or sometimes two or three lines of Lettuces are put in. Some sow the Gherkins on an open quarter in patches of three or four seeds together, in rows about 5 ft. or 6 ft. apart, and 3 ft. or 4 ft. asunder in the row. Hand-glasses are then placed over the seeds, and when the young plants have come above ground abundant ventilation is given until they show flower, when they are fully exposed. Others sow a few seeds in the middle of the space between fruit bushes for about 6 ft. or 10 ft. into the brake, but no further. Thus, being near the outside, they get plenty of air and light, and have, in addition, the shelter of the bushes. In most cases, however, they are raised in frames and transferred to the open ground in June, and in this way they fruit earlier and usually give less trouble and better results.

C. W. S.

TREES, SHRUBS, AND WOODLANDS.

JAPANESE MAPLES OF THE PALMATUM TYPE.

THESE, in common with many more excellent shrubs, have for a long time been under the ban of a false frost-tender reputation, which has unfortunately hindered their propagation and prevented them from taking that place in British landscapes which they long ago might and ought to have occupied. I have once before, somewhere about this time last year, had something to say concerning the beauty and hardness of one of these Maples, and it is with the proofs before me which the incontrovertible severity of the past winter has given of the frost-hard character of these shrubs that I am again induced to make an effort to redeem them from almost utter neglect, and, if possible, instil into others something of the admiration which I myself have for them. Here, in Derbyshire, fully exposed during the past winter, the smallest twigs of these plants were uninjured by a zero cold, and later, when in spring they shot out their frail growth 1 in. or more in length 10" of untimely and unlooked-for frost one morning failed to hinder them from developing their thin shoots and handsome, palmate, dissected leaves of all shades, from Apple-green to the most brilliant crimson; and now they are in all their glory, pleasant to look upon, and giving, as it were, by means of contrast, a new interest and aspect to their naturally more sombre associates.

The common *Acer palmatum* forms a dense average-sized shrub, having numerous long thin shoots and opposite small palmate, at first light, afterwards dark green leaves. *A. p. atro-purpureum* has larger, at first bright, afterwards dark, red leaves on stouter shoots. *A. p. dissectum* has finely-cut skeleton-like elegant apple-green leaves, equaling the finest Ferns in their Vandyked veination. Sub-variety *rubrum* of the last is characterised by its reddish-brown leaves, and presents a fine contrast to the last named. Both are very attractive either in the mixed shrubbery or singly on a lawn. They ought to be planted close to walks in order that the tracery of their elegant leaves might be the better studied.

I have enumerated the most distinct and striking of the varieties for outdoor planting, but there are many more polymorphic forms some of which have prettily variegated leaves, but though all are perfectly hardy, they are better calculated for conservatory decoration than for any decided effect out-of-doors. I am not going to underrate the qualities of such ornamental plants as purple Oaks, Beeches, &c., but I only say that *A. p. atro-purpureum* is the most ornamental shrub of all. Seen near, its foliage is not only dazzling, but also exceedingly neat; seen from afar, it scintillates among other shrubs like a ruby. May I be allowed to suggest, if it has not already been carried into practice, that this plant might be advantageously used for bedding purposes? Plants, say, from 1 ft. to 2 ft. in height planted permanently in beds would produce such a show as no *Alternanthera*, *Iresine*, or similar plants are capable of making, and though the plant in question is deciduous, the bare twigs in winter need be no objection to its use in this way, as even nude twigs are surely as pleasant to look upon as the bare black soil of beds in winter, all the more conspicuous after the fiery glare of autumn has vanished.

Borrowash, Derbyshire.

G. SYME.

FORMS OF LEAVES.

ONE of the most frequently used characters in the description of plants is the form of the leaf. This can hardly be wondered at, seeing that it is one of the most striking and, generally speaking, one of the most constant characters possessed by the plant. It is, however, far from being invariable, and cultivators are frequently witnesses of changes of this kind which never come within the ken of the scientific botanist. The Olive, for instance, bears nearly circular leaves on the ground shoots, whereas the ordinary leaves are six or eight diameters in length. Several species of Ivy bear heart-shaped leaves at the end of their long watery shoots, the normal leaves having five and seven lobes. The common Bramble also varies greatly in its leaves even on the same shoot, but the example we are about to cite is still more extraordinary than any of those already mentioned.

For many years past we have noticed that in making sowings of *Sorbus Aria pinnatifida* (figs. 1, 2, 3) a number of the seedlings always appeared to belong to different species, if we may judge by the forms of the leaves, some of them bearing simple and others compound leaves, the former closely resembling those of the Bird Sorbus, a fact which led us to doubt the authenticity of the seeds. But seeing that these discordant results were produced so constantly, we determined to procure the seed from a source which was beyond all possible doubt. We even went so far as to collect the seeds ourselves from plants in our own possession, which we sowed in pans in virgin soil, placing them under a frame in a greenhouse to which we ourselves alone had access, but always with the same results as when we made sowings from seeds procured through the ordinary channels



Fig. 1.—Shoot of *Sorbus Aria pinnatifida* with simple leaves.

and sown in the open ground. The forms shown in figs. 1 and 2 were not the only ones that we found amongst these sowings. They are, so to speak, the extremes of the series, between which we found every possible variation. One example of this is shown in fig. 3, in which the leaves are only slightly indented at the lower part. What is the lesson to be learned from these facts, of which we can personally guarantee the exactitude? A number of conclusions may be drawn from them, the principal one being that *Sorbus Aria pinnatifida* is not a species properly so called, but only a variety. We are not only quite willing to admit this last-named fact, but we will go further, and even allow that this plant is a hybrid—that convenient term with which so many botanists in a state of distress and bewilderment seek to account for facts which they cannot otherwise explain. But this easy method of getting out of a difficulty is really but of little worth, seeing that these terms—variety and hybrid—are of the vaguest possible character, and cannot be used in any definite sense where scientific principles are in question. Such arguments generally recoil on the heads of those who use them, and render the so-called demonstrations utterly false and worthless. If we allow that *Sorbus Aria pinnatifida* is a hybrid or a variety, how many other so-called species may we not place in the same category, most of which reproduce themselves continually with almost unswerving uniformity? In fact, we should have to include under this head the major portion of those varieties which botanists consider to be separate species. On the other hand, if we examine the opinions of botanists on the subject of the plant of which we are speaking, we shall find ourselves in another difficulty, which cannot be solved easily even by scientific botanists, the facts of the case being opposed to each other in such a way as to greatly weaken it. The plant we are speaking of bears at least six synonyms, if not more, being included under no less than five different genera by as many botanists. We

have no wish to enter into any discussion as to the value of any of these appellations, which in no way change the facts of the case; but we would take leave to observe that they seem to point to the fact that the Pear, the Service Tree, and the Thorn are of one and the same genus. We are, however, in no way inclined to endorse this supposition, and if we were asked to give any opinion on the subject we should incline to the idea that the species figured belongs to the



Fig. 2.—Shoot of *Sorbus Aria pinnatifida* with compound leaves.

genus *Sorbus* and lies in the vicinity of *S. Aria latifolia* and *intermedia*; in fact, it only differs from these species by the lobes of the leaves at the base being indented more deeply, while, as for the other characters—habit, growth, general appearance, flowers, and fruit, they are exactly similar. Our principal object, however, in writing this article is not to interfere with the nomenclature of this plant, but to show, by an indisputable example, that, contrary to the usually admitted opinion, there is no absolute limit to be drawn between simple and compound leaves, and that we may pass from one to the other without any very striking gaps, a fact which is in strict conformity with the grand law of natural harmony, which embraces and unites all, by showing that wherever there is unity of principle the deviations from it are always relative, an opinion which we always have and always will maintain. We may formulate our views in



Fig. 3.—Shoot of *Sorbus Aria pinnatifida* with partially cut leaves.

the following axioms: Wherever there is unity of composition differences can only arise from diversity in the arrangement of the parts, the forms of plants being, so to speak, nothing more than the clothes which conceal their life. From these two axioms we may deduce a third, viz., all plants, being composed of the same elements, are allies or relations. It is not a question of greater or smaller. The creation is infinite and infinitely variable in all its parts.—*Revue Horticole*.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS.

Outdoor Camellias.—I commend the following passage in reference to these to the notice of "Cambrian" (see p. 414). He will find it in the second page of the first volume of the second series of Sweet's "British Flower Garden." "The Camellia is not generally so much cultivated as it deserves, though it is very hardy, standing our severest winters when planted out against a wall, or in any sheltered situation without protection; but being such an early flowering plant, the buds are often much injured and sometimes destroyed, if not covered a little in severe frosty weather. We believe a northern aspect would suit it better than a southern, as it would not be so liable to sudden and frequent thaws in the day and frost at night, which injures plants that are somewhat tender more than they are injured by not being thawed while the frost lasts. We have proved this," &c. My experience is altogether on the side of Mr. Sweet, and against that of "Cambrian." I believe that Camellias do best in a dull retired nook, where the direct rays of the sun can never reach them, and where their roots can be always kept moist. That they thrive well and blossom under conditions such as these anyone could see by looking out of my window.—HENRY EWANK, *Lyde*.

Chinese Method of Raising Weeping Trees.—It is stated in Regel's "Gartenzeitung," on the authority of Dr. Bretschneider, physician to the Russian Embassy at Peking, that the Chinese raise weeping trees by reversing their extremities. Dr. Bretschneider describes the operation, which he asserts he has himself repeatedly witnessed, as follows: "To raise weeping trees of *Sophora japonica*, they plant two young seedlings side by side. The tip of one of them is then bent downward and narched on the base of the other, tip downward. As soon as the graft has properly taken, the tree that was doubled down is dug up, roots and all, and the roots, denuded of the soil, turned uppermost, and the stem attached to a stake in this reversed position. The stem of the tree, which serves as stock, is then cut off at the point of union of the two, and the roots of the reversed tree form the crown of the artificial tree. In this novel position they require shading from the sun until they have formed some branches." In this manner, we are assured by Dr. Bretschneider, as translated in the *Gardeners' Chronicle*, the Chinese obtain all their weeping trees.

Weeping Cedar of Lebanon.—For the past twenty years I have admired an exquisite specimen of the true Weeping Cedar of Lebanon which stands in the grounds of the house called Menival, the second house on entering the village of Dulwich from the London end. The tree is quite visible from the road, and its gracefully pendent branches flow over one another and roll out in waves upon the Grass in a manner that reminds one of the falls of Niagara, and leads one to think while looking at it that it is the most beautiful of all Conifers. The tree looks about 30 ft. high, and is probably eighty years old, and bears cones freely. The only other specimen I have seen is visible over a wall by the riverside in the village of Sunbury, and appears of similar age. I have for years sought for this Weeping Cedar in vain in the nurserymen's catalogues, and presume it must be out of cultivation.—LATIMER CLARK.

Paul's Double Scarlet Thorn.—Thorns, or, as they are commonly called, May trees, when planted in irregular groups in parks have a pretty appearance, the whiteness of the common kind being greatly enhanced when contrasted with pink and red kinds, both double and single, and amongst these Paul's Double Scarlet is a real acquisition. We have some vigorous young bushes of it, and the lovely clusters of bloom which they produce look more like bunches of scarlet Banksian Roses than anything else with which I can compare them. In every garden, however small, space should be found for so beautiful a tree, as, whether on the Grass or peeping out of the shrubbery, it is always effective.—J. GROOM, *Linton Park, Maidstone*.

Deutzia gracilis.—One of the prettiest sights at present in the pleasure grounds here is a large irregular bed edged with this *Deutzia*, the long shoots of which are wreathed with delicate snow-white blossoms in such abundance as to look like masses of the purest driven snow. Beautiful as this well-known shrub is as a decorative plant under glass, it is even more beautiful when growing luxuriantly out-of-doors.—J. GROOM, *Linton, near Maidstone*.

The White Indian Azalea Out-of-doors.—Our white Azaleas have not only withstood the pastwinter out-of-doors entirely unprotected, but are now flowering freely, the blossoms being exceptionally fine and pure white in colour. I see no reason why Indian Azaleas in sheltered situations should not eventually become popular as outdoor shrubs.—J. GROOM, *Linton Park, Maidstone*.

Actinidia kolomikta.—A peculiarity in this hardy shrub has lately come under my notice which I think worth recording. The plant is against a wall, and as soon as the first spring leaves appeared

it was pulled down and almost destroyed. I attributed this to the cats using it as a ladder to get over the wall. It was fastened up again and protected with a wire grating, and soon sent out vigorous shoots. On Monday evening last the shoots were nailed and the wire fencing removed, and before Tuesday morning the whole shrub was violently pulled from the wall and much broken, and almost every leaf stripped off. I have no doubt cats are the culprits, but for what object do they do this mischief? They do not eat the leaves, nor do they seem to roll in them as they will in Valerian, and I can detect no smell in them. It adds to the mystery that in another part of the garden I have another species, *A. polygama*, not against the wall, which they have not touched.—HENRY N. ELLACOMBE, *Bilton Vicarage*.

PLATE CLXXXVI.

THE HARDY RED WATER LILY:

(NYPHÆA ALBA VAR. ROSEA.)

Drawn by ALFRED PARSONS.

THIS Lily is undoubtedly the most interesting and beautiful addition we have lately had to our aquatic flora; but is there any reason why it should not be further enriched by the multifarious colours of the sub-tropical species? Would it not be possible, for example, to raise hybrids between the hardy *N. alba* and the more brilliant *N. stellata*, &c., using the former as the seed-bearing plant? If the experiment has not been tried, it is worth trying. Putting aside speculations as to what may possibly be obtained in the way of hardy Water Lilies, we may congratulate ourselves on the present acquisition, for there seems to be no doubt respecting the permanency of the colour of the variety *rosa*. It was at first suggested that the colour might be due to local causes, and would possibly be lost under cultivation. Whatever the origin of the colour, some eight or nine years' cultivation prove that it is fixed. This beautiful Lily is a native of Sweden, where it is only known to exist in one remote lake—Lake Fagertårn, in the parish of Hammar. It was discovered in 1856 by a Mr. Kjellmark, and, as far as we have been able to ascertain, it was first published as a variety *rosa* in Hartman's "Scandinavian Flora," edition 10, 1870, p. 86; since then the same variety, from the same locality, has received two other names; a fact to be borne in mind in order to avoid disappointment. It should be added that these names were inadvertently given by different botanists who were in ignorance of each other's work, and not with the intention of misleading the public as to the identity of the plant. Professor Casparz, the director of the Botanic Garden at Königsberg, who has made the Water Lilies his special study for a great many years, procured living plants and propagated them, and in 1871 offered them for sale at 6s. each. At the time he made the announcement, he published the variety in the "Botanische Zeitung," 1871, p. 874, as new, under the name of *Nymphæa alba var. rubra*, explaining that it differed only from typical *alba* in the coloration of its flowers. Professor Casparz also gives directions respecting the successful cultivation of this and other Water Lilies, which may be repeated here. He observes that to grow it fine, other things being equal, it must not be too much confined for space. There is of such general application that it would seem almost superfluous to mention it had we not very day evidence of overcrowding. As a minimum it should have a superficial area of 12 square feet in water from 1 ft. to 2 ft. deep; 18 in. is a good average depth where it can be controlled. The third name was given to our Lily in Fries' excellent "Herbarium Normale," where it is called *Nymphæa alba var. purpurea*. The dried specimens of this collection are very fine, and the flowers, which are 6 in. in diameter, retain their original deep colour. Fries himself must have been greatly impressed with their beauty, for the label accompanying the specimens in question bears the significant legend: "Maximus et speciosissimus in Europa flos, Victoriani æmulans," or, in plain English, the largest and most beautiful flower in Europe, emulating the Victoria. The first coloured plate of the hardy red Water Lily was published in the supplement to the "Flora Danica," t. 141, which, however, represents the flowers of a much paler colour than those we have seen cultivated in this country. It has been successfully grown at Kew, where it produced good flowers last year; but, as already stated, it has been cultivated for some years on the Continent. The first notice that we saw of it in English periodical literature was in Trimen's "Journal of Botany," 1872, p. 329. Dr. H. Trimen there records having seen it growing in the Botanic Garden at Lund, where he was informed of its origin by Dr. Areschong. Every cultivator of hardy aquatic plants will be anxious to possess this beautiful novelty, and, as the propagation of this class of plants is not difficult, we may look forward to their wishes being speedily gratified.

W. B. HEMSLEY.



FIG. 10. LOTUS. VARIETY OF THE COMMON WATER LILY.

GARDENING FOR THE WEEK.

Flower Garden.

Auriculas.—Seed pods of these are not filling well this season, except in cases in which the flowers have been carefully fertilised. It may be as well to state, in reference to hybridising that much judgment is necessary in the selection of parents, and that seeds saved from self-fertilised flowers are not likely to produce many distinct and good varieties. Young seedlings have grown vigorously during the last few weeks, and they must be provided with more room as roots and leaves increase. It is interesting to witness the development of the leaves; at first they are quite green, but the older ones gradually become coated with farina as they enlarge. We still find small plants appearing in the seed pots, and these are picked off as soon as they become large enough to handle.

Carnations and Picotees.—It is necessary to devote careful attention to these just now, as any check to their growth would be fatal to the development of full-sized, well-marked flowers. Keep the surface of the soil free from *Confervee*, and remove all decaying leaves. Tree Carnations are now making good growth, and must be shifted into larger pots as they require it. I have seen these plants potted into very large pots, but that is a mistake. Our largest plants are permitted to flower in 8-in. pots, and smaller plants do well in 6-in. and 7-in. ones. What they require to grow in is good turfy loam, well enriched with rotten stable manure and crushed bones, and they must be well supplied with water at the roots all through the growing season. At present they succeed best out-of-doors; the pots should be placed on a hard bottom, in order to prevent worms from getting through. I never at any time use manure water; the only time when this is useful is when the plants have become exhausted from flowering freely.

Dahlias.—The advice given some time ago was to leave the plants in their pots until the weather had become fairly settled. This has now happened, and nearly all the plants will have been put into their blooming quarters. Ours are growing freely, and as the side shoots develop, all of them are pinched out but three or four. These side stems must have smaller sticks than the centre one placed to them as soon as they are strong enough to need support. Flowers will form on the centre stem of many of the plants, but these must be pinched off up to the time when the blooms will be required, as no one cares to see Dahlias in bloom shortly after mid-summer. There is no need to water, as the ground seems to be sufficiently saturated to last through the season.

Pinks.—This is now the best time to put in pipings. The smallest growths strike root most freely, and if the weather is dull and showery at the time when they are taken off, they may be put in a shady position quite in the open ground. I have propagated them in that way in Scotland and not lost 5 per cent. of them. It is rather more difficult to propagate the Pink in the south than in the north, and in dry sunny weather it is best to place the pipings in boxes, and to strike them on a very mild hotbed. They must be shaded from the sun until roots are formed.

Pansies.—It is a good plan to put in some cuttings now to form a late autumn bed. The season has been very favourable to the growth of Pansies so far. If it is intended to have good flowers for an exhibition or other purpose on a given date, pinch off all the flowers that are open or nearly so—indeed, even buds that are showing colour—about a fortnight before the date on which they are required. No flower degenerates more rapidly than Pansies, and the only way to maintain them in good condition is to occasionally denude them of flowers and apply surface dressings to the beds.

Phloxes in Pots.—The utility of these for conservatory decoration has already been alluded to, and they must now be well attended to, in order to have them very strong at the time of flowering. The Phlox is a gross feeder and absorbs an enormous quantity of rich stimulants, either in the way of surface dressing or manure-water, not too strong. Tie the growths to stout sticks as they advance, and place the plants where they can obtain plenty of light and air.—J. DOUGLAS.

Ferns.

There is no season of the year when Fern houses have a more beautiful appearance than at present, when the different tints of the young green fronds are in most cases developed. Everything possible should be done that will tend to preserve them in good condition. Unless these plants be free from mealy bug, scale, and thrips, it is impossible to keep them in a satisfactory state all through the year; the two former, from their glutinous excretions, to which the slightest dust adheres, soon cause the fronds to look black and dirty; and the thrips, though easier to kill, not only disfigure the

fronds by destroying the outer cuticle, but also cause them to die off prematurely. Where an effort was made, as recommended, during winter, to kill outright or reduce, as far as possible, these pests, the improved condition of the plants will be apparent, and whatever insects have escaped should receive no quarter. The fronds will not be in a state now to bear a strong enough application of any insecticide to kill scale and bug, and these should be sought for and removed by sponging. Tobacco water is the safest remedy for the thrips. Any plants in small pots or tubs, particularly of the Tree species, will be much assisted by frequent applications of manure water moderately strong; this will be especially beneficial in the case of such kinds as are naturally of a pale yellowish tint, like the *Cibotium Schiedei*, which ought to be in every collection where there is a house large enough to grow it; for, although it is very wide-spreading, it is of dwarf habit, with a stem insufficiently tall to admit of passing under it in the way the tall-trunked kinds allow of; but where there is a projection of rock or rootwork it can be elevated with the best effect; or a stout trunk of a tree may be used for a like purpose. Where a large collection is planted out, it is necessary at this time of the year to see that the strong growers do not encroach upon the weaker ones; this can be effected by cutting the older fronds away freely, which will at once reduce the size of those that are to come. The advantage of this during the season of growth, when replanting cannot be carried out, will be obvious.

Orchids.

Cool Orchids.—The cultivation of these, so as to attain the highest strength and vigour of which they admit, is much easier when the house in which they are located is of a character best suited to their requirements. The *Odontoglossums*, which collectively constitute the most important genus that comes under the denomination of cool Orchids, with a few exceptions, are plants that in their requirements fully realise the term cool, for not only will they bear a low temperature when at rest, but they are much averse to a high one when growing; the form and position of structure which best suits them is no doubt a lean-to facing the north, not too high or overshadowed by a wall higher than where the top of the roof-glass abuts against it, as when the house is attached to a wall or high building that extends considerably above it, light, one of the most essential elements to a sufficient healthy vigorous condition, does not reach the plants in sufficient quantity; this is evident from the strong spikes and profusion of flowers which are generally produced by plants with smaller pseudo-bulbs and less leaf development, the result of growth under enough light as compared with the size they attain where there is a deficiency of this. Where a house of the description alluded to is not available, and these plants have to be grown in a lean-to structure facing the south, or in span-roofed houses in any position under the full influence of the sun, it is a difficult matter to keep the heat from rising too high during this and the next two months, as a temperature even in the daytime of 65° to 70° will suit them better than higher. In such houses the advantage of thicker shading advised some time since will be obvious, as by the use of this the over-abundant sun-heat can better be kept out, to still further assist which the rollers and blinds should work on strips of wood just sufficiently strong to carry them, fixed 10 in. or 1 ft. above the glass, which will keep the shading material enough elevated above the roof to allow a continuous current of air passing between. Air should be plentifully admitted night and day, the floors, walls, and stages on which the plants stand kept continually wet, and the material in which they are grown equally well supplied with water. The amount of flower, comparatively large for the size of the plants, which the species of *Odontoglossum*, such as *O. crispum*, especially bear, and the different forms of *O. cirrhosum*, *O. Pescatorei*, and the great length of time the flowers last upon the plant, if allowed to remain until they decay naturally, is a severe tax upon the growths from which they are produced, as is evident by the way in which the pseudo-bulbs generally shrivel, and are some weeks afterwards before they regain their plumpness. This, with the exception of those that have flowered very late, they will by this time have done. Where re-potting is necessary, or any division of the plants is contemplated, anxiety to carry out the work, so as to allow as long a period as possible for the growth to complete, frequently induces the operator to pot or divide the plants before the pseudo-bulbs have regained their plumpness after flowering; but this I have found to be a dangerous practice, as the unavoidable breakage and disturbance of the roots in re-potting have the direct effect of cutting off the source from whence the bulbs become reinstated in their plump healthy condition, without which the young growth immediately proceeding from them cannot be expected to ever be equal to that arising from plants that have fully regained their wonted condition after the exhausting effects of flowering; and from this cause I have often seen healthy plants of *Odontoglossum*, instead of going on yearly increasing in strength and vigour, and so being able to produce double breaks, much deteriorate. There is a

considerable difference in the material employed by growers of these plants, but after trying a mixture of Sphagnum and peat in quantities more or less disproportionate of each from nearly all peat to nearly all Sphagnum, I have found that about half and half of each resulted in the strongest growth. Requiring as does this section of Orchids to have the soil in which the roots exist continuously wet almost up to the point of saturation, it is evidently necessary to guard particularly against the possibility of its becoming sour, to avoid which the peat and Sphagnum should have something like one-third of their bulk added of broken crocks. These directions, so far as the potting material is concerned, with very few exceptions, hold good in respect to all Orchids that need the soil to be kept very wet.

Intermediate House Cattleyas.—The numerous section of spring-blooming Cattleyas, including the many and beautiful forms of *C. Mossie*, *C. lobata*, *C. Skinneri*, *C. Aclandiae*, *C. intermedia*, and *C. Warneri*, will have completed their flowering, and had sufficient time for the bulbs that have produced the blooms acquiring their wanted plump condition, for, in their case as much or even more than the cooler section it is necessary for them to have fully recovered from the shrivelling effects which the production of their large fleshy flowers invariably has. The injurious result of this untimely disturbance of the roots that takes place when these plants are made up when in flower by putting several together, a practice so common with exhibitors, is almost always evinced by the weakened condition that follows for a year or two afterwards. Whatever re-potting, with or without division of the plants, is necessary, should be effected as soon as they have regained their normal state in the way above described; with these I should advise as much as possible of the earthy matter being got out of the peat before mixing it with the Sphagnum, in all cases adding a sufficient supply of crocks proportionate to the increased size of pots employed. The extent to which the roots of vigorous healthy Cattleyas adhere to the insides of the pots, or whatever they come in contact with, and the impossibility with even the greatest care of removing them without breakage afford ample evidence to the least observant that re-potting should be resorted to as seldom as possible, yet when the stems have so far advanced that the young growths formed extend beyond the rim of the pot, it becomes at once necessary to give more room, for the roots produced from such are not in a position to receive any nutriment except from water, which they get either by direct application, or through the humidity of the atmosphere, the insufficiency of which is shown by the diminished size of the bulbs made under such conditions. With a view to avoid shifting these plants oftener than may be needful, it becomes necessary to give them pots sufficiently large, yet they must not be too large, and must be regulated in a great measure by the quantity of water given not only when at rest, but through the growing season; but where Cattleyas are grown under the system of comparatively little root moisture as compared with that which is necessary for most other Orchids, I have proved by experience that there need be no fear of the destruction of roots often supposed likely to result from the use of pots larger than necessary to accommodate them for a couple of years or so. After potting keep the atmosphere surrounding the plants a little closer and more humid than usual for a few weeks so as to avoid the necessity for much water being applied to the soil, otherwise the broken roots instead of healing up and commencing growth are liable to rot back for a considerable portion of their length. Slight dewings with the syringe overhead will still further assist them in this way.

Summer and Autumn-blooming Cattleyas.—Of these the old but beautiful *C. crispata*, so charming and distinct, requires special treatment at almost all seasons; if the development of the flowers is not very slow and brought forward in a comparatively dry atmosphere, the blooming will not last half as long as it will where these precautions are taken. The conditions required are found to be such as are present in an ordinary Vinery where the Grapes are wanted at an intermediate season; here there is sufficient warmth and moisture in the atmosphere, with air and shade, that will give the flowers substance to last well for three weeks or more. The later-blooming kinds, such as the true *C. labiata*, *C. violacea*, the different forms of *C. speciosissima*, the beautiful hybrid *C. exoniensis*, and the *C. Trianae*, will now be in different stages of their growth. The two-leaved kinds usually flowering about the end of August or September will need less water to the roots than those whose growth is not so far developed; and all should be supplied now with the maximum of heat they require through the season from 55° to 65° in the night, with from 75° to 80° in the day, according as the state of the weather will suit them.

Laelias.—*L. purpurata* and *L. elegans* and others requiring an intermediate temperature and flowering through the spring and early summer will need, as regards potting, water, air, and general management, to be treated as advised for the spring-blooming Cattleyas, using no more shade than necessary to preserve the colour of the

leaves, with a free admission of air for some hours in the middle of the day, dewing the plants overhead with the syringe at the time of closing the house, treatment which I have found of the greatest benefit to a healthy development of growth; neither have I ever found that *Laelias*, *Cattleyas*, or all this section of Orchids suffer in any way from the use of the syringe when they receive enough air and light, and are not subject to the enfeebling influences of too much heat and atmospheric moisture, in which latter case syringing often results in the loss of the young growths.

Indoor Fruit Department.

Vines.—Now that Grape-thinning has been brought to a close, the main requirement will be to keep the lateral growths well stopped back, in order to prevent overcrowding. Should there be no danger of this through the Vines being at long distances apart, then allow the laterals to grow till such danger appears. Inside borders of Vines swelling their fruit will take any amount of manure water, and, as soon as applied, the borders should be mulched with 2 in. or 3 in. of fresh stable litter in order to retain the moisture and supply the atmosphere with ammonia. More than this quantity would prove too powerful and injure the foliage. Ventilate freely in the early part of the day and shut up early in the afternoon, making free use of water to engender atmospheric humidity; give a little air at 7 p.m., and leave it on all night. Grapes that are ripe or ripening cannot have too much air, unless the wind prove exceptionally harsh, which is rarely the case at this time of the year. Usually all atmospheric moisture is recommended to be withdrawn when colouring begins, but we have come to regard a moderate amount as beneficial, inasmuch as it prevents an undue development of red spider should that pest have gained a footing. Pot Vines intended for early forcing next year should now have completed their growth, which will now, as it were, require to be consolidated and ripened by the fullest exposure possible to light and sunshine. Keep lateral growths closely pinched, but the main shoot may still be allowed to grow on unrestrictedly. The plants should still have abundant supplies of root moisture.

Peaches and Nectarines.—Fruits of these in the first early houses will now have come to an end, and the trees may now be overhauled, thinning out all unnecessary shoots, especially those that keep light and air from acting on the wood that is intended for fruiting next season. If this be done now, little if any winter pruning will be necessary. Resume syringing and keep the borders well supplied with moisture. Treat succession houses as recommended in former notes for early houses, except that there should be an increase of air-moisture now that the days are longer and warmer. Ripening fruit should be fully exposed to light if it is to colour and gain off well.

Strawberries.—The forcing of these is barely over, and yet preparation must forthwith be made for that of another season. Owing to the rain, runners are plentiful much earlier than at one time was expected, and as early layering and consequently early maturation of crowns are the mainstays of successful Strawberry forcing, at any cost this operation should have immediate attention. We always layer our first Strawberries (about a couple of hundred) in 5-in. pots, in which they are allowed to fruit, and which they do much better than those layered at the same time in larger pots, the reason being that the pots get sooner crowded with roots, and this induces earlier ripening of the crowns which, as a matter of course, must fruit earlier than they otherwise would do, and, as they are forced at a dull and sunless period of the year, no inconvenience arises from their requiring to be watered oftener than those in larger pots. We layer the general stock in 3-in. pots, and as soon as the roots reach the sides of the pot we shift into 6-in. pots. The best soil is moderately stiff loam without any admixture except a small proportion of bone dust or horn shavings. Careful crocking to admit of free drainage is imperative, as is also firm potting. After potting place the plants in an open position, well supply them with water, and keep all runners picked off as soon as they are produced.

Figs.—In many instances the first crop of fruit will now be gathered, and the trees may again be regularly syringed and be liberally and frequently watered with guano or other manure water. An excess of humidity is now all but impossible provided sufficient air is given to daily renew the atmosphere, as anything like a stagnant condition must ever be guarded against. Rub off surplus fruit, and avoid laying or tying in too many new shoots, which both prevent the ripening of the wood and the flavouring of the fruit. Where the latter is ripening, keep both atmosphere and roots somewhat dry—but neither arid nor dry, and do not gather any fruit till there are symptoms of its bursting at the apex, for till that takes place it is not in perfection. The fruit will keep in a cool, airy room several days after being gathered in good condition.

Kitchen Garden.

The almost daily rainfalls which we have had rendered hoeing impossible; therefore the most urgent requirement in this department now is hand-weeding, for even if the weather should be favourable for hoeing the majority of the weeds are too large for the work to be done effectually in that way; at the same time, should the weather prove favourable, hoes will require to be freely used after weeding in order to induce a quicker growth through the aeration of the soil. The moist state of the ground has been favourable to the thinning out of all seedlings, and also to the planting out of the earlier varieties of winter Greens, Broccoli, Cauliflowers, Coleworts, and Celery. Any of these not yet planted should have attention before the season is too far advanced.—W. W.

THE INDOOR GARDEN.

UTILISING DEAD TREE FERN TRUNKS.

The sketch from which the annexed woodcut was prepared was taken in one of the Ferneries at Messrs. Veitch & Son's nursery,



Lomaria attenuata on a dead Tree Fern trunk.

Chelsea. It represents *Lomaria attenuata* growing on a dead Tree Fern trunk, which is clothed also with innumerable sporelings of various other Ferns, such as *Nephrodium molle*, *Polypodium Billardieri*, *Lomaria blechnoides*, &c. This is a desirable method of growing Ferns, as they look more gracefully and naturally than when cultivated in pots, and they do not require so much attention, as the roots insinuate themselves into the soft but solid texture of the Fern stems where they are kept at an equable state as regards moisture if water be occasionally applied. Under this treatment some kinds of Ferns thrive better than when grown otherwise, whilst others do not succeed so well. The kinds that thrive best are the *Lomarias*, *Nephrolepis*, *Davallias*, *Doodias*, most of the *Polypodiums*, many *Spleenworts* and *Maiden-hairs*, &c. A highly attractive

feature, too, is the wing of the large tropical Fernery at Kew, where there are admirable examples of this style of growing Ferns, thriving in native luxuriance, mingled with the various kinds of *Tradescantia*, *Saxifraga sarmentosa*, and *Chlorophyllum orchidastrium*, &c., and all the attendance they receive is occasional watering and a daily syringing. W. G.

ORCHID GROWING IN AMERICA.

PERHAPS the following note may interest some of your readers, as it tends to show what rapid strides have been made on this side of the Atlantic with regard to the cultivation of Orchidaceous plants, some of the collections of which, both in point of numbers and size of specimens, are not far behind the best of those in England, though, of course, the taste for them has not attained such popularity as in England, yet there is evidently an increasing demand for them in many of the States. The collection to which the following remarks allude is in the gardens of Erastus Corning, Esq., Kenwood, near Albany, New York, in which at the present time (June 4) there are upwards of 120 distinct species and varieties in flower, and the majority are represented not by small-sized plants, but by really good specimens, such as would favourably compare with those in the best English collections. Amongst those in flower of special note are the rare *Renanthera matutina*, with its singular blossoms and equally strange colouring, the beautiful *Lælia Wolstenholmie*, *Aerides Schroederi*, *A. Larpentæ*, the curious *Bulbophyllum Henshalli*, *Promenaea stapelioides*, and *Nanodes Meduse*. Of *Odontoglossums* there are, amongst others, fine plants of *O. vexillarium* and *O. Alexandre*, some of the latter bearing as many as twenty or thirty flowers on each stem. The various kinds of *Phalenopsis* are now on the wane as regards flowering; the recent addition of an unique specimen of the beautiful *P. Corningiana*, dedicated to the owner of this noble collection by Prof. Reichenbach, has considerably added to the interest of the collection. *Cypripediums* are numerous represented, including the fine hybrids *C. Crossianum* and *Swainianum*, as are also the *Epidendrums*, of which *E. Friderici Guillelmi* and *E. syringothyrsus* are the most noteworthy. The collection is rich in *Masdevallias*, and the curious *M. nycterina*, *M. elephanticeps*, *M. Bella*, together with the showy kinds, have been long in flower. The white-flowered variety of *Lælia Skinneri* is a superb kind, and should be in all collections. Another beautiful variety is a rich-coloured form of *Vanda tricolor* named Corning, and quite worthy of its distinctive name. These are but a few of the many rarities in this interesting garden. FREDERICK GOLDRING.

Bougainvillea spectabilis.—This is what we call a shy flowerer; but now and then, when it finds itself favourably circumstanced, it produces flowers in profusion. We have a plant of it here, now in full bloom, which covers a division of a half-span-roofed house between a greenhouse and Vinery; and it also occupies the adjoining roof sashes, the shoots being tied and trained close under the glass in order to expose them to full sunshine. Those in the apex of the house, where the heat accumulates, were the first to show bloom, showing us that the *Bougainvillea* delights in solar heat. Last year we turned it out of the pot it was in and planted it in a prepared place, bottomed with stones and also surrounded by them, close to a flow pipe. This stone tub, as it may be called, is about 2 ft. square by 1½ ft. deep and well drained, the soil being turfy loam, peat, and sand. It made vigorous growth last summer, and in autumn water was given so sparingly that all the leaves drooped during the day, but were revived by the morning; it was dry at the root, and seemed struggling for life. Nevertheless, this kind of treatment has resulted in a profusion of bloom. It was kept dry through the winter and spring months. It is, indeed, astonishing what an amount of drought the plant will endure without perishing. Along with this I send a shoot to show how well it has flowered. The topmost shoots under the sashes have been loosened in order to allow them to display their long pendent branches, laden with their floral treasures, to better advantage. *B. spectabilis* would undoubtedly be the glory of our hothouses could a display of its beauty be insured periodically. — J. JONES, *Penylan, near Cardigan*. [The spray sent was loaded with inflorescence of the very brightest colour. This is undoubtedly the best of all the *Bougainvilleas*.]

Viburnum plicatum under Glass.—This handsome flowering shrub is very effective as a pot plant for conservatory decoration, the blooms being produced in pairs all along the wood of last year's growth. When they first open their colour is pale pink, but they soon become white. In the shrubby border this variety is much appreciated, the smaller plants of it flowering much more freely than the older and better known *Guelder Rose*. — J. GROOR, *Linton, near Maidstone*.

THE KITCHEN GARDEN.

SEAKALE FROM SEED AND ROOTS FOR FORCING.

IN "C. W. S.'s" remarks on Seakale culture in market gardens it is stated that market growers object to the practice of raising stock from seed on the plea that seedlings "occupy the ground for one entire year without any return, and also that during the second year they are sometimes liable to produce a profusion of small crowns; and unless these are reduced the plants form but weakly subjects for forcing." As doubtless many beginners will copy the practices described by your correspondent, and for the most part usefully too, allow me to say that the experience of market growers and gardeners in private places is considerably at variance on the subject of Seakale culture if the above quotation correctly describes the market growers' opinions and practices in the matter. In one of the earliest numbers of THE GARDEN, in an article on Seakale, I showed that plants raised from seed would be fit to force at the end of the same year, and the plan is one which has very much to recommend it under certain circumstances. I never knew before that seedlings that were thinned were apt to run to seed the first year, or that the plants were liable to produce a profusion of small crowns the second season. For the last fourteen years we have grown nothing else but seedlings here, and I do not remember ever seeing a single "bolted" plant during that time. They certainly "bolt" the second season, but if the seed-stalks be cut off as soon as they appear they will produce three or four strong crowns that will not seed, but produce good heads for forcing. Wherever space is an object, and where the climate and soil are of an ordinary favourable character, no one need trouble to grow Seakale for two years before forcing, either from seed or roots, who can content themselves with good average-sized crowns.

In good seasons we have had plants 5 ft. across from seed sown in April, and we have never forced anything but seedlings till the past winter, and the reason of this was that, owing to the cold and late spring in our exceptionally late district, our plants were hardly more than above the ground by the beginning of July, and many of them were smaller than usual, but many also were fit for forcing. This season being even more backward than the last, we have planted both seeds and roots for the first time. In most parts of England, however, and certainly in the south, or anywhere where the seed can be got into the ground towards the end of March or early in April with the prospect of the plants being above ground in May or early in June, a crop of fine roots fit for forcing the same year may be confidently expected, and instead of the plants occupying the ground for "an entire year" to no purpose, they need not occupy it longer than seven or eight months. Considering the way in which seedlings are treated generally, it is hardly to be wondered at that they are usually poor. Seed being usually employed simply to raise a fresh stock of plants, it is sown in rows 9 in. or 12 in. asunder, and the plants, not being thinned out, they never get large; but sown in rows 2 ft. asunder in good, well-prepared ground, and thinned out to 20 in. or 2 ft. apart, and observe the difference. I have seen seedlings treated in this way produce roots nearly as long and as thick as an Altringham Carrot, and tops when forced of proportionately good size. The only fault belonging to seed that I am aware of where the crop depends upon it is the danger of blanks occurring; but, by steeping the seed and sowing sufficiently thick enough, little risk need be incurred in this way. Rats and mice are almost as fond of Seakale seed as they are of Peas, but if the seeds are rubbed well moist in dry red lead before sowing they will be safe from such plagues.

Seakale is becoming a much more popular subject for forcing than it used to be, and great quantities of roots produced near London are sold all over the country. These roots, however, though well grown, are often half ruined in the lifting, many of them being mere stumps not above 5 in. or 6 in. long, with all their extremities broken off; consequently they produce much poorer heads than one would expect, or than they might have done had they not been mutilated. I have seen quantities of these roots forced (all two or three years old), and must say that the produce was sadly inferior to that produced by one year's seedlings. J. S. W.

Early Peas, Potatoes, and Cauliflowers.—I have this day (June 23) gathered my first dish of Peas (William the First) from the open ground, and a most excellent full crop they are, I have also dug my first dish of Potatoes out-of-doors; the variety is Alma, the finest of all early Kidney Potatoes. Of Cauliflowers I cut the first on May 23; the seed was sown on January 25 and put in heat; they were grown on in small pots and boxes, and planted out.—RICHARD NISBET, *Asbury Park*.

Asparagus wholly Blanched.—As before pointed out, a common error, not only in the case of the public, but of persons who write on the subject, is that French Asparagus is blanched and English green, the fact being that a great quantity of second-class French produce is green, and the larger quantity of the best English Asparagus blanched to nearly the top; but neither the French nor the English really blanch their Asparagus in the sense which the Belgians and the Dutch do. In the best French Asparagus there are pinkish points, which have been allowed to see the light, and in the best English there is a shade of green on the top; but in Belgium and in Holland the whole is blanched in the same way, as thoroughly as we do Seakale. We have just received a specimen of Asparagus from M. Severcyns, grown at Malines, the shoots of which were blanched equally throughout, not a trace of green or pink being visible in the close tops. The shoots sent were about 1 ft. in length, and they had been a long time gathered before they were cooked in London. They were most delicate in flavour, a fact attested by different persons, and they were perfectly edible for the length of 8 in. The flavour was not that bitter kind which sometimes results when the shoots are exposed to the light, but something more delicate, yet retaining the true Asparagus flavour. A very favourable opinion would have to be pronounced upon such if tasted when cut, as all Asparagus should be; therefore, this simply proves to us, even more than any we have before tried, that the common opinion about the value of blanched Asparagus is wholly untenable.

Lilies in Pots for Greenhouse Decoration.—Considering how effective the various kinds of Lilies are when grown in pots, it is remarkable that they are not more extensively grown. A few days ago we saw in the Lily house in Mr. McIntosh's garden at Oatlands Park, Weybridge, numerous well-grown specimens which were highly attractive. These comprised *Lilium giganteum*, 9 ft. or 10 ft. high, and bearing several of its large, white, drooping blossoms; *L. parvum*, with from two to three dozen flowers on each flower-stem; the pretty *L. pulchellum* and *L. Hansonii*, as well as the old *L. pyrenaicum*; *L. Martagon* and its white-flowered variety; the many forms of *L. elegans* (*Thunbergianum*); *L. Washingtonianum*; and the elegant little *L. tenuifolium*, with its brilliant scarlet, turban-shaped flowers, were also well represented.

NOTES OF THE WEEK.

New Varieties of Alpine Gentians.—Mr. H. Gusmus, of Taibach, Austria, has sent us cut blooms of numerous varieties of *Gentiana alpina*. Their colours are remarkably distinct and beautiful, varying from the deepest azure blue to pure white, and in one flower of the latter colour the tips of the corolla are of a rich blue. In all the forms except the white the throat of the corolla is copiously spotted with blue on a greenish ground, and all have greenish marks on the outside. These varieties of *Gentiana* are, we believe, quite unknown in English gardens, but we hope soon to see them adorning our rockeries and flower borders.

Green Asparagus.—There has of late been plenty of green Asparagus from France in the London and other English markets having a flat, mawkish, and most disagreeable flavour, probably from being a long time out. It is likely that the green Asparagus loses flavour sooner than the thick blanched samples, though we have some reason to believe that certain soils and districts influence the flavour of Asparagus in a marked degree. In any case some samples of Versailles Asparagus sent to the London market were not eatable by many accustomed to the flavour of good Asparagus.

Hedysarum Mackenzii.—This is one of the shoiwest of the dwarfier kinds of plants belonging to the Pea family. It grows about 1 ft. high, and has slender branches furnished with leaves about 6 in. long, and having from five to seven pairs of small leaflets. The flowers are comparatively large and of a bright rose colour, borne on long slender racemes, which bear flowers successively for a considerable time. Such a pretty plant is well worth growing and is perfectly hardy. It is a native of North America, and was discovered about sixty years ago, but its introduction to our gardens is of a somewhat recent occurrence. It is now in flower at Kew.

Golden-flowered Star of Bethlehem. (*Ornithogalum aureum*).—This is one of the handsomest dwarf-growing bulbous plants which we possess, and yet how seldom does one meet with it in gardens. We, however, saw it the other day in Messrs. Veitch & Son's nursery, where it is grown in pots in a cool house, and bearing long flower-stems terminated by dense racemes of rich orange-coloured blossoms, each about the size of a shilling. It is an old introduction from Asia Minor, we believe, and, though it is generally grown under glass, it is probably as hardy as other subjects from that region.

Dendrobium McCarthyæ.—This is one of the most beautiful of all the Dendrobiums, and is now finely in flower at Kew. Its blossoms are larger than those of other kinds, and in colour somewhat similar to that of *D. nobile*, but far richer, and the long pointed lip has a conspicuous zone of pure white intervening between the deep violet-purple colours. The flowers have a natural tendency to droop, and when grown in baskets this peculiarity has a very pleasing effect. It is much to be regretted that this lovely species is reputed to be difficult to manage successfully.

White-flowered Cypripedium acaule.—We learn that a pure white-flowered variety of this beautiful hardy Orchid exists in a noted collection of plants in the United States, and is spoken of as being very handsome. It takes the place amongst hardy Lady's Slippers that is occupied by *C. niveum* amongst those from the Tropics. We hope soon to see this desirable novelty added to our collections, when undoubtedly it will be appreciated.

Double-flowered Wistaria.—This is now in flower for the first time in Mr. Anthony Waterer's nursery at Knap Hill. It is in all respects a decided acquisition, as its blossoms are perfectly double, and last a much longer period in beauty than the original with which it corresponds exactly in colour. We hope soon to see this fine climber in general cultivation.

Scilla (Camassia) Fraseri.—Though of comparatively recent introduction to our collections, this Squill will not compare with the older kinds in point of beauty, and is much inferior to the old *Camassia esculenta*, the flowers being considerably smaller and of a pale purplish shade and produced in short, dense racemes. It is, however, later in flowering than the other Squills and Camassias, which, perhaps, is a desirable quality.

Deep Pots for Lily Culture.—On a recent visit to the rich collection of Lilies in the garden of Mr. G. F. Wilson, who is one of the most successful cultivators of this charming family, we observed that pots of unusual depth are extensively used, and the fine specimens grown in them afford ample proof that deep pots are important in reference to the growth of Lilies. The depth of the pots varies of course with the diameter; thus a pot 8 in. across the top would be about 15 in. deep, and so on in the same proportion. As Lilies are deep-rooting subjects, it is obvious that such pots are more favourable for root extension than the ordinary shallow form.

The Plaited-leaved Viburnum.—This is one of the most attractive shrubs now in flower at the Fulham Nurseries, where it is grown in considerable numbers, and it bears a profusion of its white balls of flowers in a small state, which is a desirable quality. The peculiar plaited appearance of the leaves makes the species from all the others. The large-headed *Viburnum* (*V. macrocephalum*) is also largely grown here, and though not such an abundant bloomer as the preceding, its huge flower-heads, which consist entirely of sterile blossoms, render it very showy and last a long time in beauty.

Eremostachys laciniata.—Fine specimens of this handsome hardy plant are now in flower at Mr. Ware's nursery, Tottenham. The foliage is ornamental, the root leaves being 1 ft. to 1½ ft. long, divided into oblong leaflets, which are deeply jagged. The flower-stems are about 4 ft. high, furnished with numerous leafy bracts that enclose large purplish flowers arranged in whorls. Though an old introduction it is but seldom met with, probably owing to the fact that it is difficult to manage in some localities. It is a capital subject for grouping in masses in proximity with other bold perennials. It is a native of the Levant and Eastern Caucasus.

Pentstemon secundiflorus.—This species, which is one of the finest of the beautiful family of Pentstemon, is now in full beauty in the Kew collection. It is somewhat similar to *P. glaber*, but the leaves are much narrower and longer. The flowers are about 1 in. long, and the colour a bright, clear blue suffused with a pale violet hue, with pencillings of a deeper shade in the throat, and they are arranged in dense, one-sided racemes on stems about 2 ft. high. It is a native of Western North America, and is, we believe, one of the numerous introductions of Mr. Thompson, of Ipswich, to whom our gardens are indebted for many beautiful species of this genus.

Varieties of Wistaria sinensis.—We noticed a few days since, in the nurseries of Messrs. Osborn & Sons, Fulham, a variety of this popular favourite bearing the name of *multigloba*. Its distinctive character is in the unusual length of the racemes, which measure from 1½ ft. to 2 ft. long, and hang from the branches in graceful profusion. The colour, too, of the blossoms is a shade lighter, which adds to its distinctiveness. Another desirable variety is the white-flowered kind, of which there appears to be two forms, one of which seldom develops its flowers perfectly whilst the other is as free flowering as the type. A large specimen of the white-flowered variety grows against a wall, and the effect which it produces, contrasted with the old kind, is very striking.

Delphinium cashmerianum album.—The white-flowered variety of the pretty dwarf Larkspur from Cashmere is now in flower on the rockery at Kew in company with the type with which it contrasts admirably. The flowers are pure white, and are borne in the same profusion as is usual with the original kind. As there are so few, if any, white-flowered kinds amongst the perennial species, the value of this novelty is considerably enhanced, and, doubtless, owing to its producing seeds freely, it will soon be in general cultivation.

The Regent's Park.—We have been lately struck with the beauty of a bit of unimproved ground in this park, lying in front of the site of the old Colosseum, the flowering trees and shrubs being remarkable there, and the general effect very pleasing. The contrast between this and similar scenes and the sad geometry of the bedding-out, now being everywhere placed with military precision in the London parks, is very instructive.

Combretum purpureum.—One of the prettiest plants now in flower in the stoves at Kew is the above graceful climber. It has rich deep green oblong leaves, from the axils of which are produced large branching racemes of bright red flowers, which are very attractive. Though an old introduction from Madagascar, it is worthy of a place in every stove, and it is moreover very easily grown.

Varieties of Weigela.—We have received from Mr. J. Stevens' garden at Byfleet over two dozen named varieties of these highly ornamental shrubs. They appear to differ chiefly in the habit of growth, which in some is quite erect, in others pendulous, and also in the colour of their blossoms, which varies from the deepest rose, such as may be seen in the variety *Van Houttei*, through all the shades of pink to the snowy white flowers of *W. nivea*, which, without doubt, is among the most beautiful hardy shrubs we have. They are all specially adapted for small gardens, as they are not of rampant growth, and in such seasons as the present, which has been highly conducive to luxuriant growth and profuse flowering, few shrubs present a more showy appearance. There are numerous kinds, too, of the variegated-leaved forms which are desirable for producing a variety of effect amongst other shrubs.

Scent-yielding Plants.—There will be a small but interesting exhibition at the International Agricultural Show, to be held at Kilburn next week (Stand No. 627), of the products of flower farming from a commercial point of view. The acreage under scent-yielding plants is far greater than many suppose it to be. Of Roses, in Bulgaria, there are 5000 acres; Lavender and Peppermints, at Mitcham, 250 acres; Violets, at Nice and Mentone, 300 acres; Orris-root, Italy, 400 acres; Geraniums, Valencia, 250 acres; Lemon Grass, Ceylon, 600 acres; Citronella and Patchouly, Singapore, 270 acres; Jasmine, Acacia, and Tuberoses, Cannes, 400 acres; Orange and Lemon, Sicily and Bergamo, 1500 acres. Other farms exist in Timour and Malaya of which no accurate account can be given.

The Late Mr. Humphreys.—Professor Westwood, of Oxford, pays the following tribute to the memory of H. N. Humphreys in the *Academy*: "On his return from Italy, where his love for art and Nature had been fostered, he was induced by his friend, the late J. C. Loudon, to make a series of drawings of English butterflies and moths, with their caterpillars and the plants on which they feed, the text of which was contributed by the writer of this notice. The plates of these works were zincographed by Humphreys, whose skill in delineation and taste in the arrangement of his figures ensured an extraordinary and extensive sale not only of these entomological plates, but also of the series of quarto volumes on ornamental annuals—bulbous plants, ornamental greenhouse plants, and perennial flowers—planned by Mrs. Loudon; in all of which a number of different species were grouped together in each plate. Subsequently Mr. Humphreys produced a second series of volumes on British butterflies and moths. His task, however, was not confined to plants and insects. He published two volumes of illustrations of Froissart's Chronicles from illuminated MSS. in the London and Paris libraries. His 'Illuminated Books of the Middle Ages,' produced in conjunction with the late Owen Jones, forms one of the most sumptuous volumes published on manuscripts from the eight to the sixteenth century; while his works on the origin of writing, with facsimiles; his books on English coins, in which he ingeniously reproduced each in relief, printed in gold, silver, or copper, and on other coins and medals, and his work on early printed books, in which he introduced a large number of plates, representing full pages from many of the rarest early books and other similar volumes, with his two little works, consisting of the 'Miracles and Parables of our Lord,' with their original and highly elaborate coloured margins, were proofs of his unwearied industry, as they were also of his excellent taste. The two last-mentioned works and his 'History of Writing' were bound in a peculiar plastic embossed material of his own composition, which rendered them highly attractive, but which has not been brought into general use."

ANSWERS TO CORRESPONDENTS.

Laburnum Sports.—I send you three trusses of Laburnum blooms of distinct colours which I cut from one tree. The latter is about 20 ft. high and of quite handsome covered, as it is, with the three colours.—F. Dobbs. [Three-coloured blooms on the Laburnum are not uncommon; the flesh-coloured, copper-tinted kind is called *Cytisus Adami*; and the other, *C. purpureus*.]

Clematises.—What is the pretty white Clematis with flowers rather larger than a shilling, now in bloom? Is it montana or a variety of it? If not, what is it.—CONSERVATOR. [It is *C. montana*.]

Diseased Leaves.—C. We find no insects or fungi on the leaves sent; they seem to have been injured by frost.

Nertera depressa.—Can you inform me how this plant can be propagated, whether by seeds or otherwise, and if it is hardy out-of-doors?—E. B. [It may be readily propagated by division, which is best effected in spring; the young plants should be kept in a close lantern or frame until they have become well established. It may also be easily raised from seeds, which should be sown in autumn after being separated from the pulp. It succeeds out-of-doors in summer, but it can scarcely be termed hardy in our climate.—G.]

Mealie.—Will you kindly say in your next issue what kind of plant this is, which forms an important article of food in Natal?—F. H. [Mealie is a common name in Africa for Indian Corn or Maize.—J. B. v.]

Macropis Wallichii.—Allow me to enquire if any florist has this blue-flowered Himalayan Poppy. It was introduced as a novelty in 1878, and the plant I bought has proved, to my great disappointment, to be only the *M. nepalensis*. I find that both Messrs. Ware & Backhouse have been similarly disappointed, and I begin to think the plant is not in England, or we should have heard of it this summer. *M. nepalensis* has flowered abundantly with us, and two plants of it are bearing thirty or forty capsules filled with ripe seed, so that it is likely to be plentiful. It is quite hardy and is as beautiful in winter, clothed as its leaves are with thick-set yellow hairs like fur, as when it wears its summer crop of primrose-coloured flowers.—BROCKHURST. [M. Wallichii may be seen in the collection at Kew, and it also exists in various other collections. Some of the leading nurserymen no doubt can obtain it for you.]

Names of Plants.—*Axon.*—The specimen of *Rhododendron* sent is apparently some unnamed hybrid. *G. P.*—*Allium Baurianum.* *J. McD.*—3, *Magnolia acuminata*; 4, *Cytisus Emerus.* *A. M. S.*—The Fern fronds arrived much withered, and not in a condition for naming them correctly. Send larger specimens with ripe root (seed) at the back of the fronds. *W. C.*—*Tamarix gallica.* *Ceanothus populifolius.* *G. W.*—1, *Saxifraga lingulata*; 2, *S. Andrewsii*; 3, *Hesperis matronalis* *d.-pl.*; 4, *Hesperis matronalis*; 5, *Veronica pectinata*. *P. Y.*—*Limonanthus Douglasii* (California). *J. K.*—*Polygala vulgaris*, a native plant abundant throughout Britain. *S. H. S.*—*Rubus auticus*.

Venus' Fly Trap (*Dionaea muscipula*).—I have been told that this will succeed out-of-doors in summer. Can I venture a plant or two with any chance of success?—H. [The plant in question will thrive admirably out-of-doors during the summer months, provided it is allowed a liberal and constant supply of water. It will also be benefited by allowing live *Sphagnum Moss* to grow on the surface of the pots. W.]

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

JUNE 24.

THE exhibits at this meeting were unusually few in number; the principal groups were contributed by Messrs. Veitch & Sons; Mr. Fisher, gardener to F. Williams, Esq., Woodlands, Balham, who showed a well-grown collection of *Gloxinias* (to which a silver floral medal was awarded); and Messrs. Barr & Sugden, who showed an interesting collection of cut blooms, Irises, and *Pyrethrums* in rich variety. Amongst the Society's garden at Chiswick came a group of *Begonias*, amongst which one named *Nellie May*, raised and certificated from Chiswick last year, was remarkable fine, and of a pleasing pink tint. A few examples of hardy *Oreochloas* were also shown, and an interesting collection of *Pelargoniums*.

First-class Certificates.—These were awarded as follows:—**Xerophyllum asphodeloides** (Wilson).—A rare North American plant, described in THE GARDEN (p. 497).

Davallia njensis major (Veitch).—An elegant stove Hare's-foot Fern, differing from the type in having larger-sized fronds and broader pinnae.

Begonia Royal Standard (Chambers).—A very fine variety, having good habit and large symmetrical-form flowers of a brilliant scarlet colour.

Coleus Eva (King).—A kind with foliage grotesquely marbled with various shades of reddish-brown and golden-yellow.

Miscellaneous Plants.—Messrs. Veitch & Sons sent a small group consisting of *Rhododendron Duke of Edinburgh*, a beautiful hybrid with large carmine blossoms, *Euryclis australasica*, a *Pancratium*-like bulbous plant with large and bold heart-shaped leaves and umbels of white flowers. Another showy bulbous plant was *Hemanthus cinnabarinus*, one of the brightest coloured of all the kinds, growing about 1 ft. high. *Ledebouria pendula*, an interesting bulbous plant by no means showy, bearing dense pendulous racemes of small greenish flowers with purple-tipped stamens; the leaves are, as in most of its congeners, spotted at the base. *Croton Drageum* *Gloxinia Mrs. Peplow*, and *Vicomte de Condeixa*, but to these we alluded to on previous occasions. These in addition to those certi-

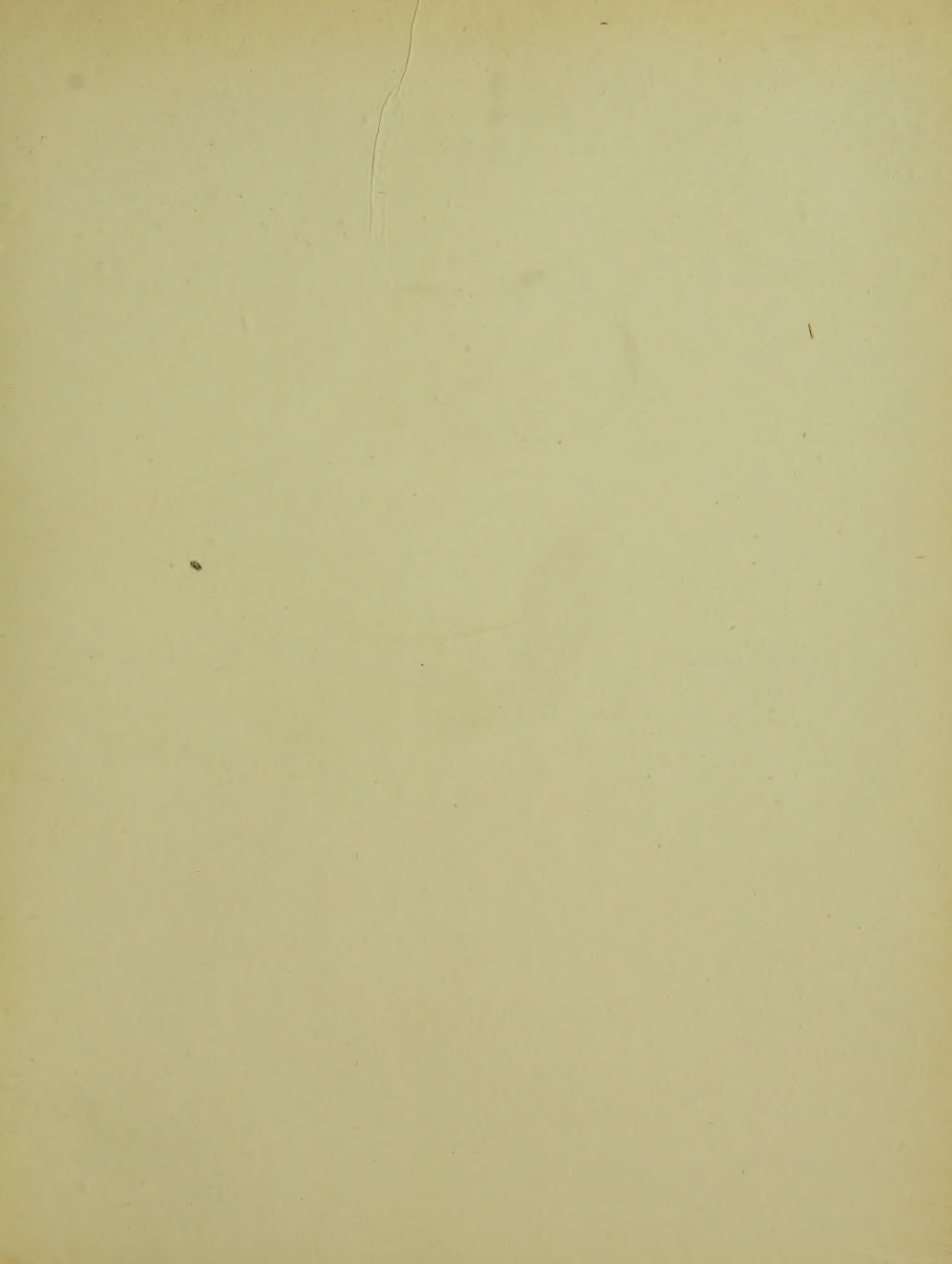
cated, which are enumerated above, comprised this group. Mr. R. Parker sent a flowering branch of *Weigela hortensis nivea*, a pure white-flowered variety, and very desirable seedling. Mr. J. King, gardener, Wray Park, Reigate, contributed *Abutilon Rosy Queen* and *In Memoriam*, also a group of seedling *Coleus* named *Maud*, *Ada*, *Edith*, *Florence*, and *Eva*; the last mentioned received a first-class certificate. Messrs. J. Laing & Co., Forest Hill, showed the fine double-flowered *Begonia M. Keteleer*, of a pleasing pink colour, *Clematis Souvenir de Prince Imperial*, a handsome variety of the *lanuginosa* section, with large flowers, white, with a faint mauve tint running through the centre of each sepal, was contributed by Messrs. Cripps & Son, Tunbridge Wells. Mr. G. F. Wilson, Heatherbank, Weybridge, exhibited a flower-spike of the rare North American *Xerophyllum asphodeloides*, to which a certificate was awarded. Cut blooms of an *Aquilegia* named *Swakeleyi* were also shown; the flowers were similar to *A. cerulea*, but of a much deeper hue. A cultural commendation was awarded to Mr. A. Boxall, gardener, Claybury Hall, Chigwell, for a well-bloomed plant of *Cypripedium barbatum superbum*. *Amaryllis Beauty of Chesterfield*, a brilliant-coloured variety with reflex petals, was shown by Mr. Speed from Chatsworth. A pretty variety of *Azalea amena* named *lateritia* came from Mr. C. Noble, Bagshot, the colour of which was unusual, and of a pleasing soft tint. Seedling *Begonias* were exhibited by Mr. J. Chambers, Westlake Nursery, Spring Grove, Isleworth, and were named *Avalanche*, *floribunda*, and *Royal Standard*, the latter being unusually fine and of a brilliant colour; a certificate was voted to it. *B. Victor Emmanuel* came from Mr. J. Watson, St. Albans, but it showed no marked advance on the older varieties. *Gloxinia Surf*, a variety with very large and erect flowers, was shown by Mr. W. Fisher, gardener, Woodlands, Nightingale Lane, Clapham; and Mr. Wills showed *G. Mrs. Causton*, also a fine erect-flowered form with large purple and white blossoms. Mr. H. Cannell, Swanley, contributed cut blooms of a dozen varieties of choice *Pelargoniums*; and Mr. Lye, Market Lavington, pots of *Lobelia Blue Beard*, which no doubt will prove a useful variety.

Fruit.—A cultural commendation was awarded to Mr. Douglas, Loxford Hall, for fruits of *Strawberry Duc de Magenta*, a variety of fair size and handsome form, but the flavour was considered not equal to that of other kinds. Seedling *Melons* (Alpha) were shown by Mr. H. Prinsep, gardener to Colonel Harcourt, Buxted Park, Sussex; and *Melon*, *Netted Victory* also came from Mr. Gilbert, Burghley, as well as two dishes of *Tomatoes*, *Acme* and *Criterion*, to which a cultural commendation was voted. A couple of well-grown fruits of *Sutton's Earl of Beaconsfield Melon* were exhibited by Mr. J. Clark, gardener to Lord Hastings. Messrs. Hardy, of Stour Valley Seed Grounds, Melton Constable, Suffolk, showed examples of their *Eastern King Cos Lettuce*, a large-growing variety, which is said to withstand the most severe weather.

Exhibition of Rhododendrons at Regent's Park.—The brilliant exhibition of these hardy shrubs from the Knap Hill Nurseries is now well worth a visit. It includes a host of novelties associated with the best of the older varieties, and the manner in which they are arranged is very effective. The large numbers of new kinds that have been raised and distributed by Mr. Anthony Waterer is ample proof, if any were wanted, that this class of plants is made a speciality of in these widely-known nurseries. The new varieties not yet distributed, as well as some not yet named, show a marked advance on older kinds, being well varied and rich in colour, combined with large size and finely-formed blossoms, and large compact trusses.

Royal Botanic Society, June 18.—We omitted to mention (p. 509) that floricultural certificates were awarded to the following plants, viz., *Coleus Princess* (Bull); *C. Duchess of Teck* (Bull); *C. Yellow Gem* (Bull); Double-flowered Ivy-leaved *Pelargonium Gazelle* (Bull); *Begonia Mrs. Arthur Fotts* (Veitch); *Gloxinia Mrs. Peplow* (Veitch); *Torenia Bailoni* (Veitch); *Begonia Edith Box* (Laing); *B. Princess of Wales* (Laing); *B. Electric* (Henderson); *Pelargonium Queen of Scots* (Foster); *P. Invincible* (Foster); *P. Amethyst* (Brabant); *P. Joe* (Matthews); *Tree Carnation Miss James* (Turner); *Lobelia Erinus speciosa Blue Beard* (Lye).

Pelargonium Society.—Although the date on which this Society's show is to be held has been postponed, a few groups were contributed on this occasion, the principal of which came from Mr. C. Turner, of Slough, who showed well-grown examples of the show and fancy varieties. Amongst them a brilliant-coloured variety named *Illuminator* with flowers of large size and fine form, was especially noteworthy. A gold medal was awarded to this fine group. Mr. Foster exhibited a numerous collection of new seedlings, amongst which were many of superior merit. The following were awarded first-class certificates, viz., *Pelargonium Invincible* Emperor William, and Joe.



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